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# ESSAYS

DESCRIPTIVE AND BIOGRAPHICAL

“Thrice blest whose lives are faithful prayers,  
Whose loves in higher love endure ;  
What souls possess themselves so pure,  
Or is there blessedness like theirs ?”

—*In Memoriam.*

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Grace A. Brewster

*From a pencil drawing by W. E. Miller Esq. made in 1876.*

Walker & Coker, ph. ac

# ESSAYS

DESCRIPTIVE AND BIOGRAPHICAL

BY

GRACE, LADY PRESTWICH

AUTHOR OF

'THE HARBOUR BAR: A TALE OF SCOTTISH LIFE';  
AND 'ENGA'

*WITH A MEMOIR BY HER SISTER*

LOUISA E. MILNE

WILLIAM BLACKWOOD AND SONS  
EDINBURGH AND LONDON  
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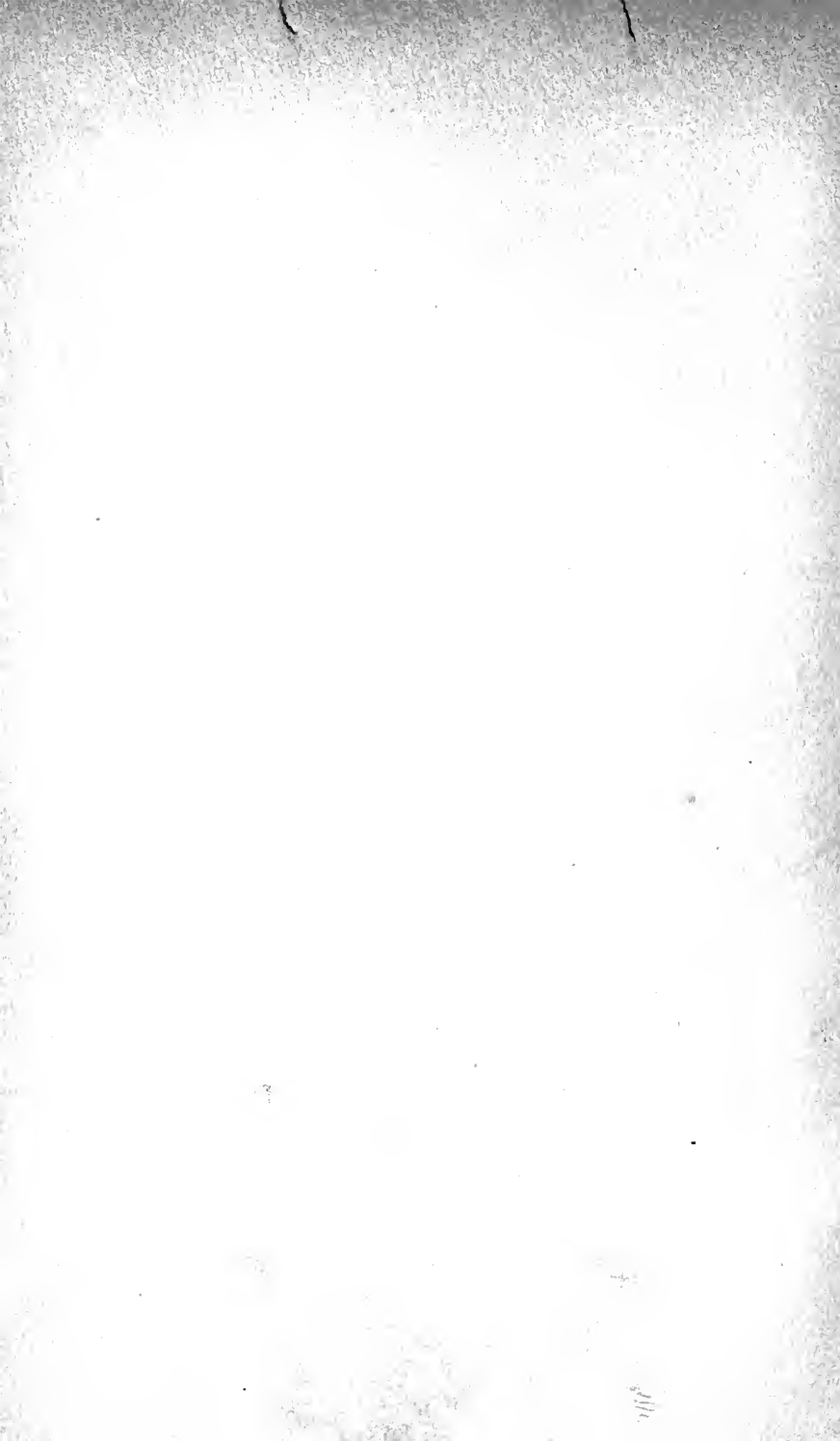
## PREFACE.

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My grateful acknowledgments are due to the Editors of 'Blackwood's Magazine,' 'Every Girl's Magazine,' 'Good Words,' and the 'Leisure Hour,' for kind permission to reprint articles from these periodicals; also to Mr Horace B. Woodward, F.R.S., for valuable help in the preparation of this volume.

L. E. MILNE.

ST MORITZ, *January* 1901.





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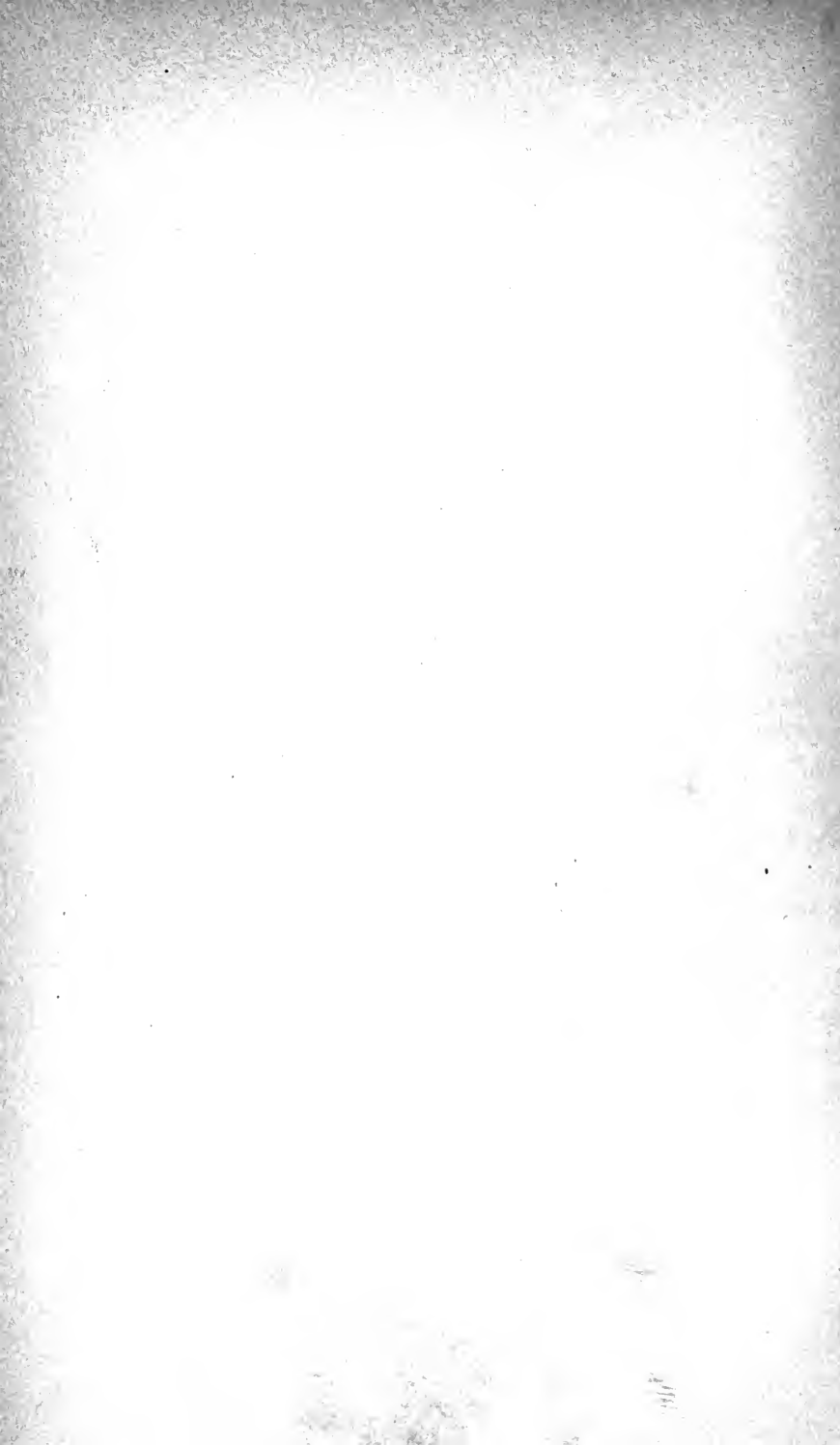
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# MEMOIR



## MEMOIR.

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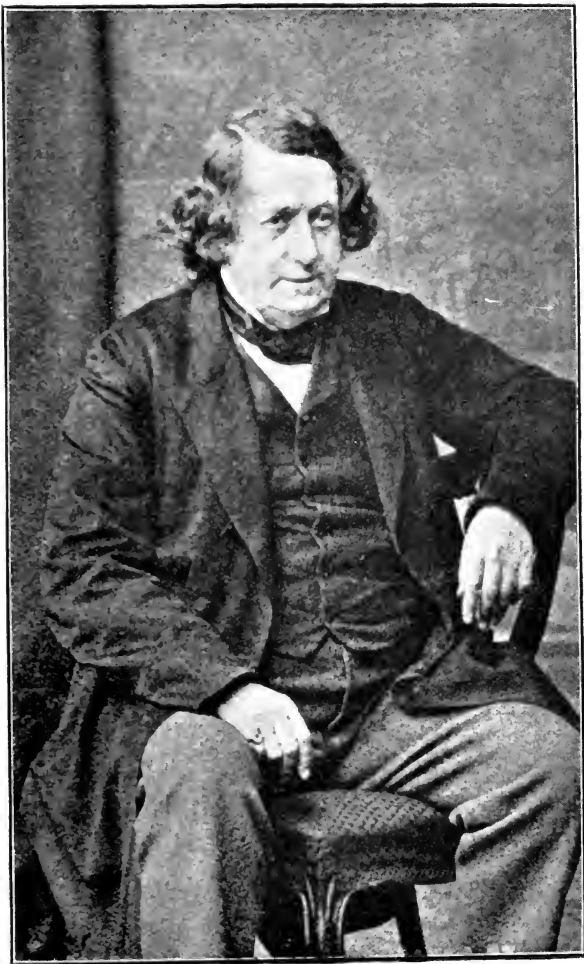
THIS volume contains articles that were contributed by Lady Prestwich to various magazines from 1879 to 1895, and it includes some unpublished papers, which have an additional pathetic interest, as they were written when she was patiently struggling against visibly declining health. These essays give evidence of Lady Prestwich's enthusiasm for the truly good and beautiful in life, of her impressionable artistic nature, and of her varied gifts; but in actual contact with the world, the sweetness and charm of a rare personality were enhanced by a most unselfish love for her fellow-beings, as well as a deep sympathy and far-reaching influence with them in their joys and sorrows. "The earth is the Lord's as the heaven is; we are alike His creatures here and yonder," was a thought ever present with her. Devoted and loving in the relations of wife, daughter, and sister, and while actively helping her husband, Sir Joseph Prestwich, in his scientific labours, she still found time for works of benevolence, visiting the sick and poor in their homes or in the hospital, upholding the higher education of women, and taking a deep interest in the question of their employment. With all these claims, the daily letter to her former

home, to her widowed mother, was never neglected; nor did Grace Prestwich spare herself, if, by the sacrifice of time, she could benefit or give pleasure to others.

Grace Anne Milne, afterwards Lady Prestwich, was born on the 18th December 1832. She was the eldest child of James Milne, Esq., J.P., of Findhorn, Morayshire, and his wife, Louisa Falconer, a descendant of an old Scottish family, one of whom was Colin Falconer, Bishop of Moray, 1680-1686. Another, a Puritan member of Mrs Milne's family, in Covenanting times, had been summoned to Edinburgh to answer for her belief, but she was thrown from her horse on the journey and completely disabled. This accident may have saved her life, as it rendered the long ride to Edinburgh impossible.

Grace is described as a very attractive, bright child, endowed with the sterling qualities of head and heart which made her father esteemed and beloved, and with a share of her mother's beauty and generous qualities. In 1837 Mrs Milne's brother, Dr Hugh Falconer, the eminent botanist and palæontologist, was sent to Cashmere by the Government of India, and in a long letter to his father, dated "Camp near Muzaffarabad, between Cashmere and the Indus, September 17th, 1837," there is an interesting account of his reception by the Maharajah Runjeet Singh at Lahore, of a journey of fifteen days with Captain Burnes's mission, then *en route* from Attock to Cabul, and of Dr Falconer's own wanderings in Afghanistan, when, as a precaution, he was disguised, and on one occasion "was taken for a pilgrim going to Mecca to worship at the shrine of Mahomet, and on another an old woman gave him her benediction as a Dowranee or Afghan nobleman." In the same





DR HUGH FALCONER, F.R.S.



letter Dr Falconer refers to his little niece, then four years old: "I allude to Gracie being able to read the New Testament. I heard from Sandy that she was a lovely infant. It must be delightful to you and my mother and aunt to hear a chapter read by the little pet. Tell my mother to give her a kiss from me." Dr Falconer wintered in Cashmere with the intention of crossing over into Thibet when weather and snow permitted, and in a letter addressed to his parents on the 15th February 1838 he again mentions Grace, and sends affectionate messages to her mother. "I am very happy," he writes, "to hear such agreeable accounts of Louisa's happiness and prosperity. . . . I imagine my father will have schooled Gracie into a thorough recollection of the Shorter Catechism by this time." Hugh Falconer's mother had been all gentleness to her gifted son, who even as a boy showed an inextinguishable taste for botany, and was wont to ramble over the country collecting wild-flowers. But more than once, when little Hugh's prolonged absence was a cause of serious anxiety to Mrs Falconer, an elder brother severely punished him for the disquietude he had occasioned their mother. Monday had been always Black Monday to these boys, as although their father exempted them from a flogging on the strictly kept Sunday, all arrears for youthful offences were made up early the next morning.

At six years of age Grace Milne was placed as a boarder at school, and when a girl of twelve she could write down from memory any sermon that she heard, to the great delight of her father and mother. Grace's education went on without interruption at home and at school, her gentle disposition winning many new friends among schoolfellows in London and elsewhere:

one of these was Mrs J. D. Murdoch, *née* Julia Grant. Her teacher's reports credited Grace with ability and industry, and above all with great amiability of character. She had a gift for taking portraits, and after school days were over and she had returned home to Abbey-side (now known as Kinloss House), adjoining the old Abbey of Kinloss, her parents and sisters became her models, with successful results. In after-years this talent took another direction, and Grace diligently sketched geological specimens for Dr Falconer, and later on diagrams for her husband's lectures at Oxford. Some of the illustrations in the work of the latter on Geology<sup>1</sup> were also due to her.

With Miss M'Donald, her sisters' esteemed friend and governess, she was on intimate terms through life, and a friendship sprang up with Miss Harriet Stephen (Mrs Barclay) which was highly prized by Grace Milne. In a recent letter Mrs Barclay pays an affectionate tribute to Grace's memory:—

“I frequently went over to Kinloss to stay with my brother, the minister of that parish. It was then such a pleasure to me to meet her and to have her for a companion. She was a very delightful one, so clever, so kind and bright and cheerful. I spent many happy evenings at Abbey-side, where she was the life of the party and looked up to by all who knew her. I was particularly struck with her love and devotion to both her parents. . . . We occasionally had a walk together, but oftener I looked forward to her spending the evening with myself and my brother at the Manse.”

Mrs Barclay accompanied her husband, Dr Alex-

<sup>1</sup> Geology, Chemical, Physical, and Stratigraphical. By Joseph Prestwich, M.A., F.R.S., F.G.S., Professor of Geology in the University of Oxford. 2 vols. Clarendon Press, 1886 and 1888.

ander Barclay, 43rd Light Infantry, to India, after her marriage, so that early in life the friends were separated. Mrs Barclay continues:—

“Very delightful it was again to meet . . . and find her the same loving friend of former years. She was even, by that time, more refined and a more beautiful character than ever. . . . Every one who knew Grace loved and admired her. She was an exceptionally fine character, full of every Christian grace and natural amiability too. She certainly was one in a thousand, and I felt it a privilege to be counted among her friends.”

The interest that Dr Falconer had taken in his intelligent young niece, when he was at home on furlough, did not decrease after his return to India.

*Dr Falconer to G. Milne.*

“BOTANIC GARDENS, CALCUTTA,  
19th January 1854.

“MY DEAR GRACE,—I wrote to you very hurriedly last mail, and fear that some of my remarks may have startled you. I wish therefore to make my meaning more clear.

“When you are asked to attend a *lecture* on any scientific subject you go for an exercise of reason. It has never yet been pretended that there has been a divine revelation expounding the knowledge of the natural world. The Almighty has given us reason, and left us, by the adequate exercise of that power, to investigate the laws and order of creation. Take astronomy, and see what has been done in it. Is there any educated person now living that believes ‘that the sun was made to rule by day, and the moon by night,’ as servile attendants on the earth? No—not one.

Does any one now believe that the sun rolls round the earth? No: yet in former times the universal belief of mankind at the present day was denounced as a heresy opposed to the Bible. Geology is now passing through, or rather it has passed, the ordeal that astronomy did in the days of Galileo. When the ignorant and bigoted fail in reason and argument, they raise the yell of intolerance and charge the doctrine with *infidelity*. The odium of the term serves their end for a time, and what follows? This denounced infidel doctrine, after the lapse of a few years, becomes the accepted faith of all mankind, philosophical and religious. When, therefore, in a good cause, the imputation of *infidelity* is raised, one need not be ashamed of it. There can be no two truths in nature opposed to each other. As regards the creation of the world, the evidence is as clear that millions and millions of years must have elapsed between the first appearance of life on the earth and the present day, as that you and I possess eyes and ears and have a living existence. The difference merely is, that the evidence is not of the same nature. The one is complete, the other fragmentary, but equally significant and strong. For instance, a tooth or the end of a joint, found in a rock, is as conclusive evidence of the former existence of an animal as if all the structure—skin, flesh and blood, and living limbs—were before us. The only difference is that in the one case the evidence is *cumulative* and complete in every detail, while in the other it is fragmentary and inductive, but equally clear and conclusive in both. For the Almighty has so ordained it that reason can safely reproduce all that has been lost, and restore to the tooth all that was correlative to it in life. But

mind you, that what I have said here bears solely upon our knowledge of the physical world, and not upon doctrines of faith for our moral and religious guidance. But I must not preach too long on this head. . . . I have written to Mrs Sclanders by this mail about the relics of her poor brother. . . .

“Make offer of my love to all at Abbotside, and believe me, my dear Grace, your ever affectionate uncle,  
H. FALCONER.”

Mrs Ewart, a sister of Mrs Sclanders, was another valued friend: she was President of the Woman's Foreign Missionary Association of the Presbyterian Church in Canada (Western Division) from 1881 until her death in 1897.

When on a visit to his mother and sister in Glasgow, Grace Milne became engaged to George M'Call, Esq. Soon after, she wrote to Miss M'Call: “I did not tell him all the golden opinions he won during his short visit here. Mamma and all were delighted with him, and they are all of my own opinion that there is nobody like him.” Their wedding took place on the 18th October 1854, but Grace's happiness was short-lived: Mr M'Call died suddenly on the 15th March 1856, and the young widow had also the misfortune to lose her infant son. These bereavements and the long illness and death of an uncle, Alexander Falconer, by whose sickbed she lovingly watched for weeks, told with depressing effect upon Mrs M'Call's strength. But she did not indulge in selfish grief. She had returned to her mother's home, Abbotside; and as her brother, Robert Milne, was preparing for a military examination, Grace studied along with him: to find that she could be of service was a cause of thankfulness, and she

expresses herself delighted at his anxiety to improve. Robert, on his part, when at leisure, would drive his mother and sisters to the banks of the Findhorn, where it was one of their greatest enjoyments to wander for hours in the woods by that lovely river, which Grace describes so charmingly. An undercurrent of deep grief is betrayed by Grace in a letter to her mother-in-law: "I am better, but feel so *crushed*. At times the old recollections are overpowering, and I have lost the control I used to have. . . . But it is unkind to write in this strain." Some years later Grace thus recalls past sorrows:—

"Since the sad summons I realised that a great change had come: the things of earth had waxed duller and dimmer, but heaven was now clearer and nearer—oh, so much nearer! Are the laws of the spiritual world like those of the physical, and does gravitation apply to both? Do we with our earthward tendency, ever seeking to take root and rest in earth, need powerful forces to wrench us violently from it? When by the removal of our dearest ties our hold of it is loosened, do we, with our feet still on earth, keep clinging to those unseen cords of love that stretch down from above to draw us heavenwards—Christwards?"

Dr Falconer's letters in 1858 urge the advantages of foreign travel,—

"Not to wed you to the frivolous enjoyments of life, but to enable you to judge for yourself. Till you had done so, I could not look upon you in another light than a demure little Puritan, whose strength lay in the ignorance of her own limited experience. . . . There's a home compliment for you. . . . I shall not be pleased certainly if you push the privilege too far, and turn nun and take the veil. But you may eschew all the vanities



of life, turn Sister of Mercy, and attend the hospitals under Miss Nightingale's banner. But I must bargain for one thing. There must be no parade about it. . . . It must be the religion of the heart and not of external formalities, doing good works for the sake of good in your day and generation, and not talking demurely about a future state! . . . With the mere formalistic profession of religious creed I have no sympathy. From the incessant contact I have had through life with every conceivable form of human belief—Pagan, Moham-medan, and Christian—I have learnt the virtue of toleration. . . . The anchor of my faith in the truths of Christianity has no concern with the embittered interpretation of abstract dogmas among different creeds as a means of salvation, but upon the purity of the Christian faith, and upon the doctrines of the meek and lowly Jesus as a rule of conduct in life. I consign no man to eternal perdition because the reason with which the Almighty has endowed him leads him to think differently upon some abstract dogmas from myself, nor do I heed much the denunciation by him which would consign me to the same lot."

A short allegory found among Grace M'Call's MSS. probably had reference to this date:—

"As I lay half dreaming, half waking, in the silent hours of the night—for there can be a lull even in the din of this mighty London—nought broke the stillness save the heavy tread of some hurrying foot-passenger, or the occasional swift transit of a solitary vehicle rattling noisily on the causeway under my window. As I lay half waking, half musing on the listless waste of my aimless life, thinking that I was as a useless weed in the garden of well-growing plants and trees, a shadowy Form appeared near my pillow, bearing one

tangled mass of silk and down. It spoke no language, but its mute appeal did not need the aid of words, as it pointed to the unspun material of many tints which was to be woven into a web.

“‘How can I weave a tissue?’ said I fretfully and yet without words, ‘except one of grey and joyless hue, for you know that my years have been steeped and dyed in sorrow?’

“But the Form pointed silently to the glittering coils of silver and golden thread which had gladdened the greyiness of many days, the sad and sombre tone of my web only revealing the glory of my blessings. And I drew the skeins of many colours to me, for I was constrained by a will superior to my own, while the Form, seeing that its lessons had already touched my conscience, slowly vanished.”

Mrs M‘Call’s anxiety about her brother, Robert Milne, then with the 10th Foot, is apparent in a letter to Miss M‘Call:—

*Grace M‘Call to Miss M‘Call.*

“[VENTNOR] 2nd June 1858.

“MY DEAR ANNIE,— . . . We have had another letter from Robert, written after the capture of Lucknow. He said it was a wonderful escape; the balls were flying thick over his head, and about 1000 of the rebels were killed. His letter was from Selimpore *en route* to Azimghur, which I see has been successfully relieved by Sir Edward Lugard. Robert says the troops under Sir Edward Lugard had marched twenty-seven miles the day he wrote, that for six weeks they would likely on an average march fourteen to fifteen miles a-day. His letter was not long, for, poor fellow, he was tired and sleepy, but he wrote to my mother

to let us know he was alive. We see by the papers that the 10th Foot distinguished itself at the taking of Lucknow. Robert mentioned that many of his brother officers were ill from fatigue and want of sleep, and that many poor soldiers had fallen out of the march that day. You can imagine how thankful to God we are to hear that, notwithstanding all his fatigues and perils, he was tolerably well when he wrote. . . . I see that Sir E. Lugard, after successfully expelling the rebels from Azimghur, had closely followed them, and had crossed the Ganges. I hope there will soon be another letter. All the troops present at the taking of Lucknow are to have six months' pay. Robert says they march generally at 12 o'clock midnight, and encamp by 9 o'clock in the morning, before the heat of the sun; they carry a loaded revolver and their swords. . . .—Believe me, my dear Annie, most affectionately yours,

GRACE A. M'CALL."

At last Dr Falconer took his niece away from the sad associations at home on a prolonged tour abroad, and an amusing letter gives the details of the proposed journey through France and Italy:—

*Dr H. Falconer to Grace M'Call.*

"31 SACKVILLE STREET, W., 25th Sept. 1858.

"MY DEAR GRACE,—I am loath to the last degree to leave England at present, as I have so much unfinished work on hand; but I have already had a reminder that the least check or cold will lay me up for the winter. I do not like the idea of travelling alone, and it has occurred to my obtuse head that if you would accompany me it might be a pleasant arrangement for us both. The Deductive Mind will at once leap to the

just perception of the case. . . . The Inductive is now growing old and stupid, and requires some one to watch over his declining years; the Deductive Mind is young, lively, and discreet. The Inductive is an old and experienced traveller, who has seen many lands, observed a little and read a little; the Deductive has an excellent turn for rational observation, and would not be too proud to have a guide in visiting the classic ground of ancient history. . . . The Deductive Mind must agree to the following arrangements. . . . Only two gowns: when the old wears out buy a new one. No band-boxes!

“Write, like a good girl, and say Yes. Arrange to come up with Uncle Charles. . . . I ought to have given you earlier warning, but I have been undecided about going myself. Show this to Uncle Charles.—My dear Grace, your affectionate uncle,

H. FALCONER.”

The travellers left England towards the end of October and journeyed in a leisurely fashion southwards, stopping for some time at Abbeville, Paris, Lyons, Avignon, Nîmes, Montpellier, and Marseilles. On this tour my sister made the acquaintance of M. Boucher de Perthes, Madame Mohl, and other celebrities, and she records her enjoyment of the kind hospitality of French friends and admiration for the courtesy and grace of their manners. There is also some surprise expressed at the impulsive, demonstrative affection of French home life, even in the presence of strangers, and to which she was unaccustomed. Of Grace herself it may be remarked that, in her writings as in her life, she put in practice the words of St Paul: “Whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever

things are lovely, whatsoever things are of good report : if there be any virtue, and if there be any praise, think on these things." Dr Falconer visited the museums everywhere along their route, examining and comparing fossils (for the most part the bones and teeth of Mammalia), which Grace was often occupied in figuring for him. She was well fitted to appreciate her uncle's scientific tastes, and in her journal she gives expression to the pleasure afforded by visits to the valley of Vaucluse and to the Botanic Garden at Montpellier, also to her interest in the Roman remains at Nîmes and Arles. With regard to these architectural remains, she puts the question, "If this their work, what then the people?" Her impressions of the people and scenery of Southern France are noted down in this journal, and from it we learn that a halt was made at Avignon :—

"We reached Avignon, famous in history, before 1 o'clock: the turreted walls surrounding it first arrested my attention, and then the old towers and spires of the [city] in the distance. By a mischance Uncle Hugh lost our railway tickets, but the *chef* of the station politely allowed us to go on our way to the Hôtel de l'Europe, under promise that if found they should be at once sent. And what shall I say of Avignon? I am only now beginning to realise that the present is *not* a dream, and that I am veritably present in Avignon. . . . Saturday, the 13th November, must be remembered as a white day. We left Avignon about eight in the morning in a carriage for Vaucluse, . . . which Petrarch has for ever rendered famous. We had excellent horses, and reached our point of interest in about two hours and a half. Leaving the carriage, and carrying our repast in a small basket, we followed the path by the Sorgues

leading to the fountain. There was no water, so we missed seeing the famous cascade; but the picturesque beauty and wildness of the scene, with all its classical associations, delighted us in the highest degree. The grotto itself was full of water and surmounted by perpendicular rocks to an immense height, a wild fig-tree being the only foliage growing out of the rock over the arch. Detached pyramids of rock stood out from the rugged clefts, and openings like small caves in the inaccessible heights of the escarped rocks added to the wild grandeur of the scene. The ancient château, said to be that of Petrarch, now in a dilapidated state and of difficult access, is a prominent point immediately above the little village, and below on the banks of the Sorgues the garden of Petrarch is to be seen, being now an island, the Sorgues on one side and a mill-stream on the other, paper being made from the wood of the white poplar. After our lunch we read a translation of Petrarch's description of his life at Vaucelse. . . .

"On arrival at Nîmes we bent our steps to the celebrated amphitheatre, les Arènes, situated in the centre of the town. Although smaller in size, I am told that it is in better preservation than the Colosseum at Rome. . . . It was capable of containing 23,000 spectators. One of the most striking peculiarities in this great structure is the absence of cement or mortar in its erection, the huge blocks of stone fitting closely together. Contrasting it with the surrounding buildings, it tells of greater minds and a greater people. We next visited the 'Maison Carrée,' an ancient temple, also a work of the Roman conquerors. This beautiful building has seen many changes, been appropriated to many different uses,

and was but recently rescued from the mud and *débris* that surrounded it, by the townspeople of Nîmes. It is supposed by some to have been erected in the reign of Augustus, and according to others ascribed to Antoninus Pius; but it is certain that first a pagan temple, it afterwards served as a Christian church in the eleventh century. . . . Its pillars are Corinthian, the volutes of exquisite pattern; but the beauty of the whole temple seems to me to arise as much from the uniformity and harmony of all the parts as from the perfection of each. . . . The new theatre of the town, opposite it, looked so very common and clumsy to my ideas. Before returning to the hotel we walked to the ancient Roman baths, now crowded with busy *blanchisseuses*. We followed the watercourse as far as the fountain (La Fontaine), near which stand the ruins of an ancient temple of Diana. . . . The next morning, soon after 9 o'clock, saw us on our way in an open *calèche* to visit the famous Pont du Gard, situated about twelve miles from Nîmes. Our route lay through an interesting country abounding in vines and olives. . . . We turned off the main road at a village called Lafoux, and, after about three-quarters of a mile, by a bend of the road we came in sight of the colossal Pont. . . . It stood before us in all its grandeur, bridging the wild grey hills on either side of the Gardon, . . . a monument perhaps unequalled in the world—unequalled at any period of its history. . . . By the evening train we reached Montpellier, the air so warm and balmy that we were glad to sit with open windows in the evening. On Wednesday morning, the 17th, having consulted a map before leaving the hotel, we were able to find our way straight to the Peyrou, . . . from which is a

superb view, and from which I had my first glimpse of the Mediterranean. . . . The Porte du Peyrou was fraught to me with more interest than any other monument. . . . Uncle Hugh, after having gone to the Botanic Garden, found Professor Gervais at last in the museum. . . . He was presiding at an examination, but doffed his crimson robes to escort Uncle Hugh through the dusty museum. . . .

“*Friday, 19th.*— . . . Monsieur Marcel de Serres, Professor of Geology at Montpellier, called to-day on Uncle Hugh. A wonderful old man, full of vivacity and energy, above eighty years of age. . . . On Monday, the 22nd, accompanied Uncle Hugh to the *chemin de fer*, where we met by previous arrangement M. and Mlle. Gervais, &c., all of us forming a party to visit the celebrated caves of Lunel Viel, containing fossil remains. . . .

“*Tuesday.*—Accompanied Uncle Hugh to dinner at Dr Gordon’s. . . . There was no little merriment when Monsieur — pronounced an English word for me to hear how well he could enunciate English. Alas! I could not discover what he was attempting, much to his discomfiture and to the merriment of the others, until Dr Gordon, who is M. —’s English teacher, told me the word intended for my hearing was ‘both.’ He had called it ‘bouf.’ I was grieved at the poor gentleman’s discomfiture, but what could I do? Altogether, it was a most pleasant evening.

“*November 25.*—Accompanied Uncle Hugh to the Museum of the Faculty of Sciences and attempted to sketch a rhinoceros jaw, but finding it would require time for my unpractised hand to make a rude sketch, M. Gervais kindly sent it to the hotel for me to work at. In the evening the old Professor of Geology called.



Uncle Hugh had had several previous visits from this wonderful old man, now in his eighty-fourth year, as full of mental and physical energy as any young man I had ever met. M. Gervais, the Professor of Comparative Anatomy and Zoology, Uncle Hugh saw daily, also M. Charles Martins, the Director of the Botanic Garden, also Dr Richard Gordon, the son-in-law of the latter."

In Grace's diary there are notes of the amphitheatre at Arles, of the Aliscamps, and of the Crau, "like the stony bed of a sea that has receded far from the position that it once occupied."

On leaving Marseilles, the travellers, accompanied by Mrs M'Call's maid, an Italian, drove along the Riviera del Ponente to Genoa, where they took the steamboat for Naples. An amusing custom-house episode at the latter city is the subject of "Our White Deal Box, and the Trouble it gave"; and Mrs M'Call thus describes a visit to Vesuvius, when a party of friends remained at the Hermitage until nightfall:—

"We had climbed to the base of the cone of Vesuvius, and waited for nightfall to watch the effect of the great cloud of hot sulphurous vapour, which in the far distance gleamed with a phosphoric light, and was exhaled from the river of boiling lava that, cleft in two great channels, flowed down the side of the mountain. This volume of heated air overhanging the fiery stream appeared in the moonless night of unearthly brightness, and changed from lurid hues of red and yellow to bluish purple, the primary red maintaining a predominance. As the current had crossed and necessarily intercepted the winding road that led to the Hermitage, to shorten the descent and gain the carriages we picked our steps over hot but solid and blackened crust. . . . The atmosphere was so highly charged with sulphur as to be

oppressive and almost overpowering, and once when our attention was riveted on a jet of steam that rose in the air with great velocity, and as suddenly fell on the cracking lava with the plash and hiss of boiling water, our guides by way of explanation shouted out, '*Acqua calda! acqua calda!*' . . . The view on looking back was inexpressibly grand, darkness obscuring all outline of the mountain: the red, hot fissures were alone visible."

With the aid of torches they descended from the Hermitage, and continued to drive by torchlight as far as Resina on the road to Naples. A day at Capri in stormy weather was a doubtful pleasure, but my sister carried her point of a visit to the Grotta Azzura.

Of existing life at Naples nothing interested her more than anecdotes of the *lazzaroni* narrated by an English physician, who for more than forty years had a large practice in that city:—

"He had formed a high opinion of the poorer class of Neapolitans, and in recounting many noble traits of character, described them in general terms as unmanageable if violently coerced, especially grateful, passionate, but never sullen. In the Revolution of 1848, when the city was sacked, a band of *lazzaroni* made their way to this physician's house, begging that he, his wife, and children should retire to rest for the night, saying they would guard his life and property by stretching themselves across the stairs, and that if plunderers forced an entrance it must be across their dead bodies. True to their word, they kept watch till daybreak; and it cannot be forgotten that in thus testifying their gratitude to a benefactor (for they and their families had received gratuitous attendance and kindness in sickness), the opportunity was sacrificed for sharing with unscrupulous companions in the loot of defenceless houses."

Sicily, with its caves, had great attractions for Hugh Falconer, but it was not until the 1st February 1859 that he and his niece landed in that island—the historian's "battlefield of nations and of creeds." Their headquarters for the spring were at Palermo, where Mrs M'Call worked diligently at Italian and carefully sketched fossils and geological sections. A visit was also made to the east coast, the party on this occasion numbering several friends, who spent their time according to their individual tastes, either in antiquarian sight-seeing or principally in the museums and caves. Grace M'Call noted down her impressions of Palermo and its surroundings as follows:—

"The city stands on the northern shore of a littoral plain which stretches inwards for several miles, and is bounded by a chain of mountains. At some distant geological period this area of alluvial soil must have been entirely submerged, but from its extraordinary fertility it has long been known by the name of the 'Concha d'Oro' or Shell of Gold. The panorama as viewed from the sea embraces features of exceeding beauty: the steep hilly slopes are furrowed by rushing torrents fed by the melting snow, while at a lower level patches of greensward watered from the same source are peculiarly refreshing to the eye after the volcanic aridity of a Neapolitan winter landscape. The rocky eminence of Monte Pellegrino with its tortuous mule-path rises to the west, towering high over the heights commanding the entrance to the port, its lower ridges dotted with villas and pleasure-grounds of almost tropical vegetation, amongst which the palm figures pre-eminent; while the Mauresque features of the tall buildings of the city are plainly discernible as they edge the depressed coast-line of the Concha d'Oro."

She gives another picturesque description of Palermo with its suburban ruins as seen from Bel Monte. After reference to the hydrostatic<sup>1</sup> pillars of Arabic origin, "which seem to carry one to the very threshold of Eastern life," and to the flint knives and other weapons found in the Cave of Maccagnone, Mrs M'Call adds a list of excursions that she recommends to strangers visiting Palermo. It begins thus:—

"After an inspection of the churches, an early visit to the undoubted Moorish tower of La Ziza; to the ruined castle of Barbarossa, of which only the shell remains, and near it King Roger's bridge; to the legendary cave of Santa Rosalia high up in the rocks, and approachable only by foot or bridle path." Including Monreale, Bel Monte, the metopes of Selinunto, and the University Museum in her list, she continues:—

"There is also in the museum a quantity of named and classified fossil bones exhumed from the lately found caves. Private collections also, which from the kindness of their owners are easily accessible to strangers, contain very choice specimens of minerals, &c."

The evidence of former land communication between Sicily and Africa was established by the discovery of representatives of the existing African fauna in the caves and superficial deposits of Sicily, including the living African elephant, the hippopotamus, the hyenas of Southern Africa, and the Barbary deer:—

"The question naturally arises, How did they get

<sup>1</sup> Mrs M'Call remarks that these pillars, placed at graduated intervals, were in connection with earthenware pipes conveying water to Palermo. They served the purpose of siphons, reducing the pressure of the water and conducting it by breaks from a high elevation to the city in the plain. So efficiently had the work been done that in 1859, after the lapse of centuries, Palermo still owed to this channel her main supply of water.

there? And to this no more satisfactory explanation can be given than that a line of land communication bridged Sicily to Africa, the connecting ridge being Adventure Bank and the fatal Skerki Shoals. Elephants could only have crossed from Africa on *terra firma* or on ice, and we know the latter to have been impossible, as although the refrigeration of the Glacial Period partially affected the waters of the Mediterranean, its action so far south could never have sufficed to encircle Sicily by an icy sea. Further, it is well ascertained that these animals do not swim across a sea channel of any great width, as exemplified in the case of the islands in the Indian Archipelago of the present day. In any case, we cannot surely endorse the hypothesis of the learned historian Ferrara, who gravely suggested that the live hippopotamus might have been imported from Africa for the amusement of the Sicilian ladies."

The following entries are from Mrs M'Call's journal :—

"*February* 2 [1859].—Charmed with the mild, soft air of Palermo. Had a visit from the Consul, Mr Goodwin. . . . Sent with cards our letters of introduction.

"*3rd.*—The day cloudy, but not so much so as to prevent visitors from coming. . . . Mr Morrison also called in the afternoon, giving Uncle Hugh much interesting information about a cave near Carini, where a quantity of fossils had been excavated some years ago under his direction, and sent to the British Museum. . . . In the evening took tea at the Consulate. . . .

"*4th.*—Neither Mrs Wood nor I ventured out, but had a busy day indoors, drawing, &c. Uncle Hugh off to the museum with his friend, Count Spada Lavini from Pisa, whose acquaintance he had recently made.

"*7th.*—Intended to go to Monreale, but when Uncle

Hugh returned from San Ciro we found there was not time, so drove to Bel Monte instead. Uncle Hugh had spent the morning with his friend at the Grotto of San Ciro, and came home laden with baskets of fossils, and his pockets filled with teeth, &c. . . . Captain and Mrs [Andover] Wood drove with us to the Villa Bel Monte, beautifully situated, just below the Monte Pellegrino. Instead of accompanying Uncle Hugh with Captain and Mrs Wood to the Consulate to tea in the evening, I spent the evening with Miss Robinson and her brother, young Mr Rose giving a very sad account of the Sicilian prisons of Trapani, some of them entirely of lead, far below the level of the soil. . . .

“10th.— . . . Drawing, tracing, and colouring a geological section. Uncle Hugh off as usual to the museum; and a geological chat between him and Count Spada in the evening.

“11th.—Accompanied Captain and Mrs Wood and Mr Grant on a drive at 2 P.M. to the Giro di Grazia. . . . The groves of oranges, almond-trees in blossom, fields of artichokes, banks covered with daisies and marigolds, wide olive-grounds, . . . hedges of prickly pear, the fresh green corn well advanced—all, with the range of mountains capped with snow in the distance, formed a richly varied picture.

“12th.— . . . Had an invitation to accompany Captain and Mrs Wood to a breakfast to-morrow on board the Russian man-of-war, given by the Grand Duke, but of course declined, being for Sunday. Our invitation through Captain Rumine, a Russian engineer officer accompanying the Grand Duke on his cruise in order to take photographs of the different towns of Italy. . . .

“13th.—Heard from — that about 200 strangers were present at the Duke's breakfast, but only other

three individuals among these were English, . . . being Sunday.

“14<sup>th</sup>.—Uncle Hugh, although still unwell, started with Baron Anca di Mangalaviti and other two gentlemen at 9 A.M. for the caves of Belliemi, situated inland, and about seven miles distant from Palermo. . . . In the evening with Captain and Mrs Wood to a party at Mr Rose’s. . . . A large number of Russian naval officers and aides-de-camp were present, a few Sicilians, almost all the English residents, Russian consul, &c. . . . all of us admiring the handsome rooms which were thrown open *en suite*—tea-room, ball-room, and drawing-room.

“17<sup>th</sup>.— . . . In the evening took tea with Captain and Mrs Wood, Mr Goodwin and Captain Rumine also spending the evening. . . .

“*March* 4.—Uncle Hugh started at 6 A.M. with the Baron Anca di Mangalaviti and Professor Porcari for the caves of Carini, distant about fifteen miles from Palermo, with the intention of staying one or two nights and of employing workmen in the fossil caves there.<sup>1</sup> I had my Italian lesson in the morning. . . . In the evening accompanied Dr, Mrs, and Miss Henry to a reception given by Mr Goodwin in honour of the officers of the British man-of-war Scourge, which is commanded by Prince Victor Hohenlohe, a nephew of our Queen. All the English residents were present, and the guests punctual to the hour. . . . The Prince was taken round the room and each lady separately introduced, then the file of officers went through the same ordeal. . . . A proposal for dancing had been mooted to our kind host, which he very wisely vetoed

<sup>1</sup> Dr Falconer’s observations on Sicilian caves were published in 1859 : ‘Quart. Journ. Geol. Soc.’ vol. xvi. p. 1.

at once, as the dancing could only have been in the room used every Sunday as a church.

"7th.—Italian in the morning. . . . A drive to San Ciro with Uncle Hugh in the afternoon, with the three—s. We did not find many [fossil] teeth, only waiting a short time at the cave. In the evening Uncle Hugh and I went to Mr Rose's evening party, Miss Henry accompanying us. It proved a very gay one indeed, all the Palermitan English residents, many Sicilians, Russian officers, and Prince Victor with the officers of the Scourge. There was dancing, which I as a spectator thought very good, the rooms well lighted and ornamented with flowers.

"10th.—A dreadful storm and no Naples boat. Uncle Hugh had arranged to go with Professor Porcari to Carini, and was compelled for the day to give up the project. I went in the afternoon to see Mrs Gardiner's collection of sulphurs and minerals. . . . In the morning I tried to draw a fossil jaw which she had kindly lent to Uncle Hugh.

"18th.—. . . The rain pouring in torrents as we returned home, forming a running stream in the Toledo, which was crossed by foot-passengers on small movable wooden bridges on iron wheels. The large iron bridge on wheels, where the Via Macqueda cuts across the Toledo, in great use to-day."

Bagheria and the Bocca di Falco were favourite drives, the former specially rich in sea and highland views :—

"*March* 22.—The fresh green grass near Bocca di Falco beautiful—the fig-trees putting forth their leaves, the cherries in blossom, the scent of the wild-flowers very sweet, and the groves still laden with citrons and oranges." And again : "On our way back from Bag-



heria we noticed fields of sumach, which, when ground, furnishes a yellow dye, passing also many carts laden with solid bricks of sulphur, which is largely exported from Catania. Our attention was, however, chiefly occupied in noting the light carts, which might pass for magnified Chinese tea-boxes painted in an oriental pattern of brilliant tints: they were evidently the common vehicle of the country, and with their drivers clad in woolly sheepskins were certainly unique. One or two Palermitan seamen we had previously remarked in this grotesque raiment, the jacket and trousers made of uncombed, unclipped wool of wonderful length: it gave to the wearer a fearfully shaggy look, recalling the costume in children's picture-books of Robinson Crusoe and his man Friday. Instead of returning straight to the hotel, we drove to the ruined castle of Barbarossa, in the neighbourhood of the city. . . . It is near King Roger's bridge, very curious in the composition of its large and small arches.

"24th.—Wet, but accompanied Mrs Henry to see Mrs Gardiner's collection. Had some friends to tea in the evening."

At the Botanic Garden Mrs M'Call's attention was attracted by the splendid *Bougainvillea spectabilis*, then apparently uncommon in Europe, and she also remarked the decorative effect of *Myrsiphyllum asparagoides*. Some years later (23rd March 1872) she wrote to the 'Garden' in favour of its universal cultivation in England:—

"*The Creeping Myrtle (Myrsiphyllum asparagoides).*

"In the interesting notice of this plant in No. 15, p. 324, the writer expresses an opinion that its application for ornamental purposes must be peculiar to

America, as he did not find it in European plant catalogues, nor mentioned in any foreign works on floriculture. I am glad to learn, from the editorial note appended to the description of this interesting plant, that it is occasionally to be met with in botanical or rare collections in this country ; but I wish to remark that it is well known in Sicily, and that it is cultivated and largely used for ornamental purposes in Palermo. The Palermitan belles find from experience that its delicate graceful sprays outlive all other green foliage in the heated air of a ball-room; and they arrange it with great taste for personal decoration, adding some of their splendid camellias, or other brilliant flowers, which grow in profusion in what is literally a land of flowers. I made an experiment some years ago at Palermo with a branch of the *Myrsiphyllum asparagoides*, which was brought to me as a specimen of the plant so much used by ladies there for the decoration of the hair, on account of its long retention of greenness and freshness. It was laid on a table in a room without water, in order to ascertain how many hours it was possible to keep it fresh. Unfortunately, no record was kept of the actual length of time, although it impressed all of us. . . . I have long wondered why our English ladies do not adopt this very beautiful and delicate plant as an addition to their ball-room toilet. I can only surmise that its merits have been comparatively unknown in England, and I trust that your interesting notice, coming as it does all the way from across the Atlantic, will eventually lead to its universal cultivation in greenhouses in this country.—G.”

Apparently no trustworthy guide-book for Sicily existed at this date, but their Palermo friends readily

gave Dr Falconer all local information, particularly Mr Goodwin, the British consul, whose long experience made him thoroughly conversant with everything relating to the island. Mrs M'Call writes of the "unbroken unanimity and affectionate footing" on which the eight or ten English and American resident families stood to each other. They were chiefly the heads of well-known Mediterranean mercantile firms engaged in the export of Sicilian produce, and were remarkable for "their warm welcome and kind hospitality to strangers." She mentions the amusement of some Italian friends, who had accompanied Dr Falconer and herself to the Cave of San Ciro, when their carriage was surrounded by a crowd of forty-two women and children. These Sicilians would shout for joy when they saw the geologist arrive, anticipating a harvest of small coins for the fossils that they had collected. On a drive to the Cathedral of Monreale the tourists were "waylaid by crowds of urchins, who, espying the carriage from Monreale, came racing down a short path to meet us. They took up their position in detachments at corners of the zigzag road, where they knew the horses must rest, varying their monotonous cry of 'Piccola moneta' [A small coin], or 'Datemi qualche cosa' [Give me something], with the more daring assertion of 'Non ho mangiato per sette giorni' [I have eaten nothing for seven days]; whilst one conscience, more hardened than those of his companions, strengthened the appeal for money by substituting 'fifteen' for 'seven,' declaring with smiling face that his fast had lasted a fortnight."

After-experience led Mrs M'Call to the conclusion that the villagers of the northern shore were more prosperous and civilised in their homes and customs

than the poorer village communities of the Catanian and Syracusan coasts. It was "a pleasant surprise in our natural-history expeditions to meet with willing help. . . . The women in particular appeared to be patterns of industry, and were generally to be seen sitting in groups before the cottage doors, busy doubtless with the unruly member, but busy also with their needle or the distaff; their luxuriant hair generally coiled in heavy plaits, and their clothing, if poor, always clean and white. . . . No pen has ever painted the tragedies of the *piombi* of Trapani, for what survivor ever escaped to tell the tale! Death was the only angel of release. Happily these are memories of the past, and no one has now to dread the unseen and whispered horrors of the *piombi*."

In the end of March the travellers left by steamer for Messina, Catania, and Syracuse:—

"*March 25.*— . . . Packing and receiving good-bye visitors. . . . Reached Messina harbour on Saturday about noon, landing at 1 P.M., our party consisting of Dr and Mrs Henry, Dr Daubeney,<sup>1</sup> and Miss Croome. We found the vessel tolerably good, quick, but our ladies' cabin close."

Visits were paid to the Syracusan quarries, where 7000 Athenian captives were imprisoned, "starved to death, those few only saved who could repeat the verses of Euripides to their masters"; to the Orrechio di Dionisio, the Greek theatre, ancient fortifications, and tombs; and to the amphitheatre and museum. Mrs M'Call partook of Hybla honey, and had a lesson in paper-making from a Sicilian on her return, laden

<sup>1</sup> Sometime Professor of Chemistry and afterwards Professor of Botany at Oxford. Born 1795; died 1867.

with tall stems of papyrus, from a boating excursion up the Anapus.

“*March* 30.—Breakfasted at 5.30 A.M., and started in two carriages for Catania; stopped to look at the caves near the Scala Greca, passed through several villages and close to the sea.”

After a halt at Lentini the tourists arrived the same evening in Catania. It was impossible at that season to ascend Mount Etna, so they were content with an expedition to Nicolosi and Monti Rossi:—

“The view of the plain of Catania very fine, and the current of lava of [1669?] as it entered the sea below Catania distinctly visible. Found the path over loose scoriæ and lava rather difficult. . . . We had a good view of the many fumaroles of Etna, all their small craters extinct. Etna itself looked grand and peaceful, but on the whole I was disappointed with it, the existing volcanic action of Vesuvius being to me more awful and striking. Strange that the one mountain alternates with the other in its eruption.”

From Catania they drove by Aci Castello past the Cyclopean rocks to Giardini near Taormina, and thence next day to Messina.

Mr Charles Falconer, an uncle of Mrs M'Call, with Margaret Milne, a younger sister, joined the geologist and his niece at Naples: all proceeded to Rome for Easter, continuing the journey by Florence and Leghorn to Genoa.

“*Rome, Monday, April* 18.—Climbed the Monte Pincio to see the Eternal City, but the seven hills not easily distinguishable.

“*20th.*—Heard the ‘Miserere’ sung in one of the chapels of St Peter’s. The impression made by St Peter’s disappointing, gorgeous and magnificent in

detail, but the excessive ornament doing entirely away with the vastness I had expected would impress me so much. To me no religious awe nor solemnity in the great temple of modern Rome.

“*Thursday, 21st.*—Saw the Benediction of the Table (Tavola) by the Pope after he had washed the feet of twelve poor brethren from different countries. Had a good view of Queen Christina of Spain with her husband, of our young Prince of Wales, and the diplomatic corps of different countries. In the evening the exposition of the relics from a balcony, which could not have edified the beholders much, from the distance at which they were held. The Pauline Chapel beautifully illuminated.

“*Friday, 22nd.*—To the English Church service in the morning, a drive later in the day to see the city, and to hear the splendid ‘Stabat Mater’ sung in the Church of St Marcello in the evening.

“*Saturday, 23rd.*—To the Church of St Ignatius, and in the evening to the Trinita dei Pellegrini to see the feet of poor pilgrim women washed by the noble Roman ladies, a ceremony which takes place every evening during Holy Week and until Tuesday evening of next week. Many of the feet of the pilgrims were very black and dirty, the ladies were allowed no soap, and it was something curious to see the jewelled fingers washing a leg unhealthy and sore, the ladies kneeling and kissing the foot when washed. After the *lavanda* the pilgrims all sat down at table and were waited upon by the ladies, soup, bread, meat, vegetables, and wine plentifully provided, while a Latin hymn was read by some Church dignitary. It seemed to me one of the most amiable of the Roman ceremonies. A hospital is attached to the church, and the ladies belonging to this

lay sisterhood who attend upon the sick have their stated days appointed.

"24th.—To St Peter's to see the Benediction on Easter Sunday. The illumination was very fine in the evening, the Cross bursting at once into a star of light. It looked very gorgeous from Monte Pincio.

"May 13.—Florence. . . .

"23rd.—The Pitti Palace, the Uffizi, the Duomo, the churches, the Cascine Gardens, the Boboli, the expedition to Fiesole, the beauty of the situation,—all made me enjoy Florence more than any other city of Italy."

The travellers remained in Florence until the 30th May, and there they became acquainted with the celebrated mathematician, Mrs Somerville, then resident in that city. This acquaintance was renewed at Naples in 1870, and Grace M'Call's recollections of her are to be found in the sketch entitled "An Evening with Mrs Somerville." From Genoa the party, with the exception of Dr Falconer, took the Mont Cenis route to Geneva and Paris, where some time was enjoyably spent :—

"On landing at Genoa from the Messageries Company's steamboat, it was discovered that the captain of the vessel had forgotten to leave our four passports, and had sailed away with them to Marseilles. The two gentlemen of our party insisted on temporary passports being granted : next day, after some trouble, these were at length given to us, and we were able to travel by the last train to Turin. The authorities had indeed good reason to be vigilant—the breath of battle was in the air ; and as our train halted for a few minutes at Alessandria, there was time for us to get sight of the fortified encampments round the station, and of the fascines and earthworks bristling with cannon.

“At one point we were within twenty-five miles of the contending armies of Austria and struggling Italy, so that there was a suspicion of risk about the journey that in our utter ignorance of warfare gave it a zest to some of us—though not to all. How horror-struck we should all have been had the fact been made known to us that the awful battle of Magenta was fought that day, and that we were almost within earshot, the Austrians being defeated with a loss of 10,000 killed, besides, it was said, 7000 prisoners. The Piedmontese and French troops, headed by Victor Emmanuel and Louis Napoleon, lost 4000 men killed and wounded. One shudders in reading the bare record. Could we wonder that the railway officials looked sick at heart and went sadly about their work that day?

“Turin is a noble city, built of fair white stone, and mainly of modern date, the lofty colonnades of the wide streets furnishing shelter from the fierce heat of summer and from the icy winds of winter. Crossing the bridge over the Po, we saw from the opposite side the great alpine river sweeping past the city in tremendous volume. . . . But it was views of the range of the Alps at the end of those colonnaded streets which made marvellous pictures. With a blaze of sunshine, the blue depths of a cloudless sky were pierced by icy peaks and heights mantled in eternal snow. Often our thoughts have dwelt upon those vistas from the streets of Turin, and of those peaks and heights far above the snow-line. . . . The streets were full of eager and hurrying crowds, there was the throb of excitement and trembling anxiety, for what family of Piedmont had not a son or brother fighting in the field! But those snow-crowned mountains looming in the near distance were in telling contrast to the fevered



din of the streets, and remained as they remain until this day, calm, immovable, and majestic. The sight was suggestive !”

She adds :—

“On our first visit we were introduced to Baron Poerio, the man of letters and of pure and blameless life, who, convicted at Naples on false political charges, had languished in irons in the awful dungeon of the Bagno di Nisida, chained night and day to a condemned criminal. Poerio had been sentenced to twenty-four years of irons. . . . Instead of the anxiety visible on so many faces, we found Poerio beaming with happiness, well content at the turn of events in favour of Italy. The news just received from the field of Magenta had sent a sigh of relief from end to end of the town. The evacuation of Milan by the Austrians was bound to follow, as in fact it did four days after Magenta, and the cities of Central Italy were one by one declaring themselves a reunited kingdom. . . . Poerio may be described as more like a quiet Englishman than a southern Italian. He was below the middle height, with a fine head and broad forehead, and a very open expression of countenance. Except for the grey hair and other marks of premature old age, more particularly the general bleached appearance—like that of a plant blanched by long seclusion from the light—there were no signs of suffering on the refined features, nor any evidence of his shattered health. Considering what he had passed through, his appearance was a pleasant surprise, especially when we recollect that he had only made his escape a few months before. It was early in the year (1859), his sentence after urgent protest having been commuted to exile in North America, that he set sail with sixty-six

companions. The vessel was seized by them on the voyage, and sailing to Cork, they landed Poerio, proceeding to London on the 18th March. Conscious of our unspoken sympathy, he gave us a pleasant welcome: his face was radiant with satisfaction, and no one who did not know his history could have guessed at the terrible experiences of his life. It was to prevent a recurrence of such experiences among her sons that much of the life-blood of Italy was shed. As we glanced at him, we could not but wonder and ask ourselves whether this white-haired Italian gentleman with the placid manner and with that wonderful smile lighting up the large eyes could be the prisoner. . . . We could not allude to Nisida nor to the still more horrible dungeon of Ischia, where he had been subsequently immured, yet words were not needed to assure him of our sympathy. After a short interview, we left Poerio with a baffled sense of wishing to say so much, and of having been able to say so little. Yet was it not an event in one's life to have spoken to Poerio, and to have been even in momentary touch with that heroic soul!

"Early next morning we took train to Susa. We had to cross Mont Cenis in a carriage with four horses, in company with four friends who had a similar conveyance and who wished to keep by us. In going over the pass we met several companies of French infantry, the soldiers singing merrily as they marched down into Lombardy, to fight by the side of the Italian troops. Fourteen days later the great battle of Solferino was [won]."

After describing the views as "magnificent," she goes on:—

"At the highest point the snow lay in wreaths in

the ravines and in clouds on the summits, inexpressibly grand and beautiful. Wild torrents formed by the melting snow dashed down the steep.

On the 29th June 1859 the party of travellers returned to London, Mrs M'Call having been absent since October. The winter of 1859-1860 found her at "Balnageith," a villa which was rented by Dr Falconer at Torquay; but in 1860-1861 the two sisters were again abroad with their uncle. They halted at Amiens and Paris, and took the steamer from Lyons to Valence. Grace describes the scenery of the Rhone along this route, and also as seen from the hill above the cathedral at Avignon:—

"*October 25.*—Had such a glorious view, the Rhone winding through gardens of olives, mulberries, and madder. Its junction with the Durance; the extent of rich country covered with vineyards and olives and dotted by châteaux and villages, with the grand range of the Basses Alpes bounding the horizon; the cloudless clearness of air and sky and glow of sunshine, all combined, must be seen to be fully appreciated."

They remained at Nice from the 3rd November to the 1st April, when they started on a tour in Northern Italy. On the 13th of April Mrs M'Call wrote from Genoa to one of her sisters, then at school in London:—

"Uncle Hugh has taken an immense fancy to Nervi, and has been to the English consul here to ascertain the prices of land, rents of villas, &c. There is no hotel at Nervi, which is a great want. Genoa is like a beehive, full of noise, bustle, and preparations in the event of war with Austria. Bands of newly recruited troops everywhere, and heaps of cannon-balls piled along the beach.

“Genoa is more like London than any other place I have seen, from its being so crowded. The dress of the women is very graceful and picturesque. They wear a scarf of the most airy white muslin over their heads, fastened in their beautifully plaited hair by means of two large pins. This muslin scarf is always worn out of doors, and falls in front, enveloping the shoulders. We drove to the English church on Sunday forenoon. . . . The cabman had great difficulty in guiding his carriage through the densely crowded streets—all in their best attire. On Sunday evening we went to a most interesting service in the Reformed Italian church: more than 150 were present, mostly Genoese men in their prime—which was very delightful to see. They have a service at sunset every weekday, when Mr De Sanctis, a reformed priest, expounds a chapter, reading a verse of it in turn with those present. On Sunday evening they also read a verse of a chapter in turn: I read mine with a trembling pronunciation. It was quite thrilling to me to listen to a beautiful sermon in the Italian language. And the singing of the hymns sounded so sonorous and sweet. I am so interested I could write pages on the subject. . . . Our best love to your dear little self, and kind regards to Miss Hare.”

Mrs M'Call records an interview with General Garibaldi at Turin, and the sisters were present in the Italian Chamber on the occasion (18th April) of Garibaldi's first appearance as a deputy. It was on that day also that he attacked Count Cavour's policy with regard to Nice, and his unfulfilled promise to enrol the Garibaldian troops in the regular army:—

“Face and figure were more massive than photographs had led us to expect. . . . He was of middle

height, the great breadth of shoulder and deep wide chest denoting unusual strength; and, as one of his biographers remarks in giving a picture of Garibaldi as he first appeared on the battlefields of Europe, his frame was cast in an iron mould combining agility with strength. His eyes lighted up when we mentioned Sicily, and he wished to know what part of the island we had visited. We told him of our trip to Palermo: yes, we had been to Messina, and spoke of our short stay in Catania and in Syracuse. . . . I tried at first to act as spokeswoman; then the head of our party talked with the General in English, in which he expressed himself fluently and with eager interest. . . . A kindly word was said to each of us with a hearty shake of the hand, and we said 'Addio' to the man . . . whose name and fame belong for all time to history."

In her diary for the 17th April Grace adds:—

"We then went and called on the Baroness Solaroli. . . . We also saw her two engaging daughters, Antoinette Countess Savoiroux and Pauline Countess Regis. After a long chat with them we proceeded to the Camera, where sending, according to his desire, to Baron Solaroli, we were conducted up to the ladies' tribune and had the greatest celebrities pointed out by him—Cavour, &c. We could not understand the speeches, partly owing to the height. . . . Next day we hurried to the House long before the hour for debate. We found it already densely packed—crowded to the door, and the ladies' gallery fortunately unattainable. . . . We however managed to find standing room half-way up the open stair leading to it, whence we were able to have a glimpse of the proceedings. Cavour sat in his place in front of the

ministerial benches facing the entrance. He looked grave, and paler than on the previous day, yet he seemed in apparent health, and there were no symptoms of the mortal malady that in a few more weeks was to remove him from his place,—

‘No touch of change,  
No hint of death in all his frame.’

“Suddenly there was a noise and scramble at the entrance, and Garibaldi, in the traditional red shirt and with his sword by his side, was seen in the doorway, vainly struggling to force a passage through the living mass. In an instant the deputies to a man had risen to their feet, and a scene followed of the wildest enthusiasm. The *vivas* and cries of welcome were deafening—nay, thrilling; they were caught up again and again, each cry of welcome louder than the last. Many eyes were moist, and the scene to us was altogether unparalleled. The one member who preserved his dignity and calmness of demeanour was Cavour, who seemed almost impassive. . . . He could only listen to the tremendous tumult of applause and wait in patience until the assembly was reduced to silence from sheer exhaustion.

“As we looked from the one chief over the sea of heads to the other, we felt the two men were strangely in contrast. The dauntless soldier with the candid, open countenance, its lion-like character enhanced by the shaggy moustache and tawny beard, his hand on the hilt of his sword as if bent on a set purpose; and the political chief, self-contained, impassive, powerful, standing like a statue, and waiting with those compressed lips for the bitter words which he knew were to be hurled at him. Yet how was Garibaldi to reach

his seat? He was not carried in on men's shoulders—there was not space for the attempt—yet in the struggle to force his way up the crowded passage it was evident that he was more than once carried off his feet, and pushed forward to his place among a group of his followers. The heat was stifling; in the crush our position had become insupportable, and it was with no little difficulty we forced our way out, and thus missed being present at what is now regarded as a memorable episode in the political history of Italy.

“*April 17.*—From Turin to Milan in less than four hours, passing through the fertile plain of Lombardy with its rice-fields. . . . In the afternoon we went and had a glance at the splendid Duomo with its ‘forests of pillars.’ Its interior is to me more solemn and striking than that of St Peter’s, Rome.

“*Milan, April 20-29.*— . . . For three days I acted as Uncle Hugh’s secretary at the museum, writing the description of the rhinoceros skull found by Cortesi. We made the acquaintance of the scientific and charming Abate Stoppani.<sup>1</sup> . . . Through a kind letter of introduction from Mr Susanni to his cousin Count Marogna, we [often] saw the count and countess, and were very much pleased with the latter, who takes an interest in the Milanese hospitals. . . . We visited with them one day the monster hospital of Milan, which requires the services of 150 medical men daily when full!

“The Palazzo Brera, with its gallery of paintings, was interesting, but did not excite so much admiration as the single fresco of the Cenacolo, painted by Leonardo da Vinci, in the refectory of the church of Santa Maria

<sup>1</sup> Antonio Stoppani was Professor of Geology in the Royal Technical Institute of Milan. He died 1891, aged sixty-five.

delle Grazie. Mr Reynolds, the vice-consul, was very kind in giving us, unasked for, letters of introduction for Venice."

A letter, dated "Milan, 7th May," is addressed to one of Grace's sisters :—

"In good truth I am not sorry to have an excuse for writing to our little woman. On the 29th ultimo we made an expedition of five days to the Italian lakes — Como, Lugano, and Maggiore, — an expedition we enjoyed more than I can express, having beautiful weather, without a drop of rain, all the time, and all of us in good health and spirits. The scenery is very lovely, so grand and yet so varied. Lugano is my favourite: though considerably smaller than the other two, it is wilder and more striking, especially from one particular point at the town of Lugano. . . . We wished to land at Bellagio, but it was very dark at 8 P.M., and the captain said we would have half an hour out in a small boat. We followed his counsel and landed at Cadenabbia, where we found an excellent hotel, but the people not prepared for strangers, as they had no keys in the doors and the house was full of painters. Next morning I could hardly take time to dress, so tempting was the view from the window, the lake with its banks bordered with vines, the purple lights hanging on these mountain banks."

The following week the sisters and Dr Falconer left Bologna on a few days' tour :—

"A trip to the Adriatic coast had long been planned, and now the opportunity offered, as an Italian naturalist who knew the district was willing to be our guide to the exarchate cities of Ravenna and Rimini. Duly taking into account all the risks to be run, as brigandage was then rife in the fair province of the Romagna, we



arranged to limit our excursion to a few days only. During the old papal days the bandit trade had proved a prosperous one, the police and other officials, though not openly banded with highwaymen, had rightly or wrongly been suspected of connivance with them, as the brigands and their booty invariably got off with impunity. Victor Emmanuel's new Government had taken active steps to keep and clear the road, but it was not to be expected that a few months of vigorous reform would stamp out an evil that had existed and been the scourge of the country for centuries.

"Nothing daunted by vague rumours from the 'brigand country,' nor by the fact that the daily diligence on the Ancona road required an escort of carabinieri, conveyed in a separate carriage, we travellers hired a *vettura* and horses belonging to Giovanni Schiavone, a good Paduan *vetturino*, who throughout the trip proved a trusty guide, completely identifying himself with the interests of his employers. The excursion was not made from mere love of adventure, or for the sole gratification of seeing a classic province of classic Italy comparatively unvisited: the main object was the acquisition of geological information for two of the party, our Italian friend being well known in the world of science.

"On the 15th of May we made an early start from Bologna *minus* carabinieri, leaving baggage and all valuables in charge of the worthy host and hostess of the Albergo Svizzero, carrying just enough money to defray the expenses of five or six days. For the common good, a watch was taken with its key slung on cord. . . . By 9 A.M. we had left Bologna far behind, and were rolling over the old Emilian Way through the great alluvial valley of the Po, the outlying spurs of the

Apennines bounding it on our right, but nothing visible on the left from our low level save an endless vista of luxuriant fields. The long straight line of road was almost tiresome in its sameness, every inch of ground being highly cultivated: the plain seemed to be mapped out in small sections, each field lined off by rows of mulberry-trees interlaced by trailing vines. . . . Imola was only our mid-day halt, the two geologists agreeing to postpone their work in its neighbourhood until our return. A description of Imola would apply to a hundred Italian towns—dilapidated buildings of some pretension betokening better days; groups of chubby children playing on the shady side of a hot street; and the *dolce far niente* of the shops apparently only disturbed by an occasional sale of polenta, or macaroni, or other farinaceous store. The afternoon journey was resumed through a like country of extraordinary fertility, abounding in corn and wine and silk; the mulberry in lieu of the olive, fields of corn or artichoke alternating with flax in fullest bloom, or glowing masses of the crimson clover.

“In passing through the stirring town of Faenza we were fain to stop and have a look at its curious pottery, but our limited time necessitated Forli, a stage in advance, as our night’s quarters, where we arrived begrimed with dust. Only two dirty rooms, exorbitantly dear, were to be had in the hotel, so we took refuge for the night in a second-rate inn, ‘Il Vapore,’ which comes back to one’s memory in a cloud of dismal associations. Would that some of us had chosen our vehicle as a shelter, instead of seeking the couch prepared by the rough but kindly inmates of the ‘Vapore’! At early dawn we were again *en route*, catching a glimpse of the citadel as we emerged from the city

walls. Its brave defence by Catherine Sforza is a matter of history, and matches in heroism the northern legend of Black Agnes of Dunbar.

“We certainly saw the country at the most favourable season; but in the vicinity of Forlimpopoli the surpassing richness of the plain seemed to attain a culminating-point, and called forth the exclamation from one who had spent his life in the East, that its fertility was only exceeded by the far-famed valley of Cashmere. The absence of farmhouses and the rare occurrence of small villages cannot but attract attention: it is perhaps an evidence of the normal existence of brigandage, the population being chiefly distributed in towns of a size strong enough to hold their own.

“Nearing the Adriatic shore, we sighted on our right the miniature republic of San Marino, whose territory consists of the isolated rock of that name, crowned on its loftiest pinnacle by a fort overlooking the city, which is itself perched on a projecting crag half-way up the mountain. The refuge of a band of primitive Christians, its origin and history are as romantic as its physical and political position, the little commonwealth being amenable to no outside authority, and recognising only its own traditionary laws. It dates as far back as the persecuting days of Diocletian, when Marino, a Dalmatian mason, followed by a band of hunted fellow-Christians, sought the fastnesses of the mountain, and obtaining a gift of the rock, Marino founded, if we may so speak, the smallest independent community in the civilised world, and which now bears his name. Fit emblem of its faith, the rock has stood the test of ages. Owing to its great elevation the climate of San Marino is very variable, and its inhabitants are reputed to be extremely jealous of intercourse with the outer world,

lest innovations creeping in should modernise their time-hallowed institutions. And there, on that primitive spot, the drama of human life has been enacted in all its phases 'from dawn to sunset,' through all the episodes of joy and grief, of life and love and death.

"But adieu to sentiment and San Marino, and on to Rimini, which, thanks to early rising, we reached at noon, giving first our undivided attention to creature comforts, and a satisfied inspection of the tidy rooms at 'I Tre Re.' We next hurried to the Adriatic shore, its distance from the hotel being now about a quarter of a mile, but the sultry heat magnified it tenfold. Arrived on the flat sandy beach, the most deductive imagination failed to trace the outline of the opposite Dalmatian coast, the ripple of the wave being lost in a soft haze. We had to content ourselves with a view of fishing-smacks and other small craft crowding the port of Rimini, and our naturalists found consolation in carrying away some packets of *Foraminifera*, which were afterwards identified by an expert in England. Threading, and of course losing, our way through the poor seaward locality, evidently the quarters of a fishing community, . . . we reached the Arch of Augustus. It is much more decayed than the Bridge of Augustus which spans the Marecchia, and which we crossed on our entry into Rimini, but reserved for a leisurely survey in the evening. The massive blocks of which this noble bridge is built, held together without cement or mortar, [locally] characterise the masonry of the grand old Roman, and remind one forcibly that we of later ages do not transmit such enduring monuments to posterity. The Rimini churches are said to be enriched by some good paintings; but we had to rest satisfied with a cursory view of the cathedral, which is full of

memorials of the Malatesta, the great family of Rimini. . . . Possibly the building shown as the house of Francesca is but traditionary, and only indicates the site of the real dwelling; but the intelligent bookseller who volunteered to accompany us to the spot declared that such was not the case. . . .

“The road now ran like a low railway embankment through a watery series of swamps, covered with a network of the magnificent white water-lily (*Nymphaea alba*), on our right the southern section of the Pineta, or Pine Forest, fringing the shore. Ravenna Stone pines (the *Pinus Pinea* of botanists) are noted in Italy for their beauty: the wood is well adapted for ship-building, and the edible seed or nut, called ‘Pincio,’ constitutes a staple article of food for the peasant. It is difficult to give a detailed description of this renowned forest without incurring a just imputation of plagiarism. . . . ‘Ravenna’s immemorial wood’ must be thinned and stunted since the days when its timbers built the fleets of Rome and masted the navies of Venice; it still, however, clothes a large portion of sandy waste left by the receding Adriatic. It has been the theme of historians, and has been apostrophised by poets from Dante to Byron. . . .

“The town of Cesenatico, and, farther on, Cervia and its salt-works, were the only objects of any interest until near Ravenna, when we arrived at the noble basilica of St Apollinare in Classe, which was built on the margin of the sea, but is now four miles distant. It is a perfect specimen of the earliest Christian antiquity, and those who give credence to apostolic succession will find here in excellent preservation a chronological series of portraits in mosaic and painting of the bishops and archbishops of Ravenna down

to a recent date, beginning with the martyr St Apollinaris of Antioch, whose ashes are deposited under the high altar. It is impossible . . . to give any idea of the wonderful mosaics illustrative of Scripture history, or to enumerate the great Greek sarcophagi and other marble monuments of a church which is reputed to possess a purer architecture than any of the early ecclesiastical edifices of Rome. I was most struck with the quaint character of some of the mosaics, a flock of sheep invariably typifying the Church of Christ, and here, as in the early basilicas of Ravenna, the secondary place being assigned to the Virgin. . . .

“On entering Ravenna, the city once imperial, then royal, and subsequently metropolis of the exarchate, our feeling was one of keen disappointment: its situation in the midst of a malarious marsh had prepared us for gloomy streets and a certain sepulchral air, but the inhospitable scowl of the few faces we saw made an unfavourable first impression. . . .

“It is truly a city of buried glories, and is said to present in our day more perfect relics of the Byzantine empire than Constantinople itself. In her domes and in the ecclesiastical adaptation of her basilicas Ravenna has also given to Christian Rome the elements of all her church architecture. Moreover, it is not uninteresting to observe, in these our days so ominous to the temporal power of the Pope, that both the bishops and city of Rome were originally under the exarch of Ravenna. It was only when the conquering Pepin and Charlemagne wrested Ravenna from the Lombards, and presented the exarchate as a temporal possession to the Pope, that ‘the world beheld for the first time a Christian bishop invested with the prerogatives of a temporal prince, the choice of magistrates, the exercise

of justice, the imposition of taxes, and the wealth of the palace of Ravenna.' We felt perplexed amid the antiquities of such a city. Should we first make a pilgrimage to the tomb of Dante, or visit the sepulchre of the Empress Galla Placidia, the strange woman who was 'a slave twice, a queen, an empress,' and see her colossal Greek sarcophagus and that of her brother the Emperor Honorius? Or should we quicken our steps to the magnificent mausoleum of the Gothic king, Theodoric, whose regal dome was reared by himself, but whose ashes, as those of an Arian heretic, have not been suffered to rest there? Should we inspect mosaics unique in Western Europe, or contemplate mythological sculpture side by side with Christian art, or turn from Giotto's frescoes, or Guido's and Guercino's paintings, to study the basilica of San Vitale, with its Greek inscriptions untouched since the days of Justinian, and which contains the famous tomb of the exarch Isaac? . . . Ought we to yield the palm to the splendid mosaics of Arian bishops? for Ravenna, once the stronghold of Arian heresy, has seen ecclesiastical as well as political revolutions. All these and more we accomplished, but only by the most ingenious economy of time and distance. Next morning at six o'clock we had access to the mausoleum of King Theodoric, a mile beyond the city. To give some idea of this massive circular structure, I may mention that the cap of the dome, which is *one* solid block of limestone, measures 30 feet in internal diameter; and we gained some interesting particulars of it and the locality from a friendly sergeant of carabineers, whom we found with a second on duty at that early hour. They had chosen this spot as a good point of outlook on the surrounding country, the mausoleum having been built on a slight

eminence, but the soil is gradually rising round it. The carabineer inquired our movements, and warned us against the road we proposed to take by Lugo, which he characterised as a nest of brigands, adding that a gang of thirty-five had been apprehended there a few weeks before, and that we must take care to conceal our destination at all the inns. We assured our new friend that we had nothing to lose, but he impressed us with the necessity of caution by adding that in such a case they might probably take the horses, leaving the carriage, which, to say the least, would be extremely inconvenient. On expressing our surprise at such a state of things, the carabineers remarked that the small proprietors and owners of vineyards were the bandit pest of the Romagna; that they never hesitated to attack property, and even life, when in lack of employment, or under pressure for piastres, some of them practising brigandage as a wholesome excitement to vary the routine of their quiet agricultural life! It was curious to see the enlivening effect of these admonitions on the Italian mind of Schiavone, who entered with alacrity into all the precautions for secrecy. One word on Schiavone. Although Italian, he was fair-haired, blue-eyed, tall, and lean, with a sanguine complexion and head of the dolichocephalic type. But for his gold earrings he might have passed for a Scottish Highlander: Schiavone, however, did not rejoice in the high cheek-bones so often characteristic of the Northern Celt.

“We had a distant view of the modern port of Ravenna, which gave a fair show of the rigging of small traders: it communicates with the sea by a canal several miles in length, and from its position must still play an important part in the shipment of the wealth



of the Romagna. The commercial and fishing gear we saw would not, however, lead one to infer that the ancient port Candiano had figured in the world's history as a great Western naval station of the Greek empire. Nor did we pause to examine the walls that still encompass the city, hoary and crumbling with time, and still presenting traces of demolition by their besiegers. . . .

"Driving first to the library, which is specially rich in missals, and would furnish many days' work, we glanced at an illuminated psalter by Mary, Queen of Scots, but failed to see Dante's MS. . . . We next visited the monument that really had most interest for us in Ravenna—the tomb of the great Dante. We stood in profound silence by the Greek marble sarcophagus which contains all that is mortal of the poet exile: it is enclosed in a small circular building surmounted by a modest cupola, a very unpretending edifice, but which is nevertheless one of the brightest glories of Italy. Banished from Florence, Dante spent his last years in Ravenna, where he had as his friend and patron Guido da Polenta, father of the unfortunate Francesca and Lord of Ravenna.

"The origin of Ravenna was like that of Venice; it was built on wooden piles in lagunes, but the Adriatic has now receded nearly four miles. Let us hope that better days are in store for this city, thrice a capital—first of the [Western] Empire, then of the Gothic and Longobardic kings, and finally of the exarchs. Truly it is styled 'fortress of dead empires.' . . .

"Pursuant to the carabineer's advice, Schiavone gave out at the 'Bell' Emilia' that we were bound for Ferrara; but once outside the city walls, we tacked, the Lugo route was abandoned, and we took a road

across country to Faenza, on the Emilian Way, reaching Imola by sunset. We met with no molestation, and one would have imagined a long night's rest grateful to wearied limbs; but our two geologists, merciless to others as to themselves, named five o'clock next morning to Signor Scarabelli, the courteous *podestà* of Imola, who kindly volunteered to be their guide to the ossiferous strata in the neighbourhood. After a few hours' drive through fertile fields we regained Bologna."

A *détour* was made by Mantua and Verona, and Mrs M'Call's experiences in these cities are detailed in the paper entitled "In Mantua during the Austro-Italian War." From Venice the travellers continued their journey over "one of the grandest passes in the Alps"—the Finstermünz—to Innsbruck, and thence homewards by the Rhine.

*Grace M'Call to Miss M'Call.*

"STOUTHALL, 5th August 1861.

"MY DEAR ANNIE,— . . . You will be very pleased to know that I have come to England this year much stronger than for several years. . . . We have now been a week at this beautiful place, . . . and have enjoyed our visit to Colonel and Mrs Wood in spite of the very untoward weather.

"Stouthall is situated on the peninsula of Gower, about fourteen miles from Swansea, which is the nearest railway-station, so you can fancy how secluded and quiet the country is. The house is a very handsome one, containing a fine old hall full of family portraits. We were able to get out the first two or three days, and went to see the pretty coast scenery in the immediate neighbourhood. . . . To-day the weather is still more rainy and windy. Several

bone-caves were discovered by Colonel Wood some years since, and these afford special interest for Uncle Hugh.

“Before coming here we were four days at Usk in Monmouthshire, staying with a distant cousin, Mr Thomas Falconer, who is a county judge, but had then an interval between his circuit duties. A deaf-and-dumb brother lives with him, to whom he is exceedingly kind. Louie and I felt a difficulty at first in carrying on a conversation with him, but after the second day we talked by writing on slips of paper. He is wonderfully cheerful and intelligent, and takes a lively interest in the Volunteer movement, being a second behind the others in executing the movements, which he does with great precision. I am trying to employ these wet days in painting. Mrs Wood is really an artist, and she kindly helps me, showing me how to colour. . . .—Believe me, your affectionate sister,

GRACE A. M'CALL.”

*To the Same.*

“31 SACKVILLE STREET, 27th Aug. 1861.

“MY DEAR ANNIE,— . . . We returned from Wales a few days since, or rather from Chepstow, where we stayed to see Tintern Abbey and the beautiful banks of the Wye. Beautiful as the river scenery is, I do not consider it finer than our own Findhorn in the north: the Wye is richer and much greater in extent, but does not equal the Findhorn in wild beauty. . . . We had a letter from Robert by last mail, dated 19th July, from Allyghur, where he had returned from Moradabad after a distressingly hot march. . . . He says had it not been for his strong constitution he would have been knocked up altogether. . . . London

is usually such a whirl that I truly prefer the quiet and dulness of the present month to the hurry and bustle of other times of the year. We are to dine at Sir Charles Lyell's to-night. . . . Thank you again, dear Annie, for your letter : it is such a comfort to me to hear of you all. . . .—Believe me, your affectionate sister,

GRACE A. M'CALL."

About this date an intimacy began with Mrs Murchison (*née* Clara Bickersteth), the wife of Dr Charles Murchison, F.R.S., which continued through life. Dr Murchison was also on an intimate footing with Dr Hugh Falconer, and afterwards edited his geological memoirs in two volumes, preceded by a short biographical sketch. Another friend and neighbour of a later date was Miss Jane Thomson, between whom and my sister little notes in Italian often passed ; and with Mrs Warrington Smyth (now Lady Smyth) she was also on affectionate terms.

From 1861 until Dr Falconer's lamented death in 1865 Grace M'Call resided with him at 21 Park Crescent, London ; and the same house, when occupied by his brother Charles, continued to be her home until her marriage in 1870. They had near neighbours, and the pleasantest of friends, in Sir Charles Wheatstone, his young daughters (Mrs Turle, Mrs Sabine, and Miss Angela Wheatstone), and in Mrs Gwyn Jeffreys, Mrs James Fraser, and their families. Mrs M'Call paid frequent visits to her mother in Scotland, and when in Edinburgh we note that she attended Professor Masson's Lectures on English Literature, and in London she studied Italian under Professor Volpe. Another trip to Paris of some weeks' duration with her sister, Isabella Milne, in 1867, was also an enjoy-

ment. That Dr Falconer always welcomed his niece's return is evident from his letters :—

“A blank day—no note from you. I have therefore ordered the fatted calf *not* to be killed until something more definite transpires.”

*H. Falconer to G. M'Call.*

“[LONDON,] 14th October [1863].

“MY DEAR GRACE,—A few lines to say that I had your note this morning, which has not contributed to brighten me up for the day. Poor —, I hope and trust she is not going to have a sharp attack, but what business has a young puss like her to have pains and aches in her bones? Let her leave that to old fogies like me. That weary, weary Edinburgh, that there ever should have been an Edinburgh! . . . I dare not now say a word about when you are expected. *Les domestiques* of a morning speak daggers of impatient inquiry by their looks, but I make no sign. . . . Remember the telegram when you do really and bodily make a start.—With love to all, &c., &c.,

H. FALCONER.”

*H. Falconer to G. M'Call.*

“21 PARK CRESCENT, 15th Oct. [1863].

“MY DEAR GRACE,—I know that you are exerting every nerve to come south, and that nothing except a serious necessity would have led you to delay your start. . . . But remembering as I do the terrible October and November of last year at Edinburgh, I shall not be at ease till the handboxes containing you and Louie, properly packed up, are safely delivered inside my door.”

Dr Falconer accompanied his friend Mr George Busk, F.R.S., to Gibraltar in September 1864, and on the return journey he writes to his niece:—

*H. Falconer to G. M'Call.*

“MADRID, 19th Oct. 1864.

“MY DEAR GRACE,— . . . You appear to be amused by the incidents of my first letter. You have now to open the ready flood-gates of your eyes for a series of disasters, which have persecuted us ever since ; but do not give way too much, as I am perfectly *safe* and *sound*. In the first place, the English Cadiz steamer left Gibraltar a day before her time, without giving us warning, so that we lost two days of our scant time. Next, we left in a crazy Spanish cock-boat of a steamer in a gale for Cadiz, and she delivered us there without swamping. We hurried on from Cadiz to Seville and Cordova, both of which are glorious for their Saracenic monuments, and worth a journey to Spain, if there was nothing else to be seen. . . . Cordova is, if anything, still more rewarding in its cathedral, formerly a Moorish mosque. Nothing in the wide world to surpass it as a worthy temple for the worship of the Deity. . . . Elephants and rhinoceroses, with a friendly reception from the Dons, awaiting for us at both places. From Cordova we had to take a diligence to strike on the Madrid railway at Santa Cruz de Mudela, in the best of times a journey of twenty and a half hours over a mountainous country. On Sunday the 16th we started at 1 P.M. in the *banquette* (Spanish *cupa*), being the top front berth behind the driver. On we drove at a tearing pace, with a team of ten mules at each frequent stage, up and down hill at a gallop, flogging and yelling at the mules. It was very exhilarating and fine while it

lasted—Busk beaming with delight. I had fallen asleep by the time we reached the summit of the Sierra Morena, twelve hours, when we suddenly stopped. The axle of the near hind wheel was red-hot, and the nave of the wheel smouldering, with the axle bent. On removing the wheel the axle was found to be fissured half-way through with a cleft which admitted my finger. Had it been English it must have given way long before and we been dashed to pieces, but being Spanish it held together for the grand crash, which luckily was not reached. Here we stopped; the axle was taken off, and sent ten miles away to be tinkered up into a serviceable condition. Fancy an accident of this kind occurring on the Highland road near Cairngorm, between two stages. We were on the summit of the ridge of the Sierra—bitterly cold, at the wretched hamlet of Las Navas de Tolosa, in the country of Don Quixote, and next door to the ‘Venta de Cadenas’—Dorothea and the wine-sacks. Such sterile desolation never have you witnessed, not a hovel to admit us within, hills and valleys without water, without trees, without anything but starved donkeys, lanky Dons, and pinched, scowling, inhospitable women. Thomas<sup>1</sup> in a delusive moment saw goats, and thought he could forage for milk for us, but in vain. The goats of La Mancha yield no milk, there are no sheep nor cows, and therefore no flesh, no poultry, no eggs, no nothing eatable. Busk in a frantic moment of starvation impulse called for cheese, but something foul deluged with rancid lamp-oil was put before him on a dirty plate. . . . I wildly proposed to be off, to walk the remaining part of the journey, about forty miles; but not a cart was procurable in the

<sup>1</sup> Thomas Gay, Dr Falconer’s faithful and attached servant.

whole country for our baggage, and that notion had to be given up. At length we made a fresh but false start: after going a hundred yards, the repaired axle again gave way. *Basta!* why need I harrow your feelings with further details. *Two* nights had I to pass in the open air on the summit of the diligence at that doleful hamlet of Las Navas de Tolosa. At length the damage was a second time tinkered up, in a break-neck condition, the axle drenched with water at every stage to keep the red heat down, and in fear and trembling did we at last reach Santa Cruz de Mudela, after forty-five hours' journey, on starvation rations, and necks unbroken. From Santa Cruz we got to Madrid by rail, where I had your letter, Busk getting his pocket picked of his pocket-book, with its precious contents—valuable notes, &c., but no money.

“We have been most kindly received here by Don —, a delightful, dumpy, old Spanish gentleman, a thorough savant. . . . We have lost so much time that we are unable to do more than pass through Madrid without seeing the sights, except the gallery of pictures and our fossil objects. The pictures are unrivalled. Such Murillos, Velasquez, Raphaels, Titians, Spagnolettos, &c., &c., as all the other joint collections in Europe would not make up. The Pinacothek at Munich is not to be mentioned in the same breath. I have also been highly rewarded by fossil objects. I have had a grand haul of new things. We start to-morrow night by the mail train for Bayonne, where I shall try and finish this letter and despatch it to you. I am now tired, and go to roost. . . .

“BAYONNE, 21st October.

“Arrived here this morning from Madrid *en route*



to Bordeaux. . . . Still persecuted by road accidents. The line from Madrid is single, and between Segovia and Valladolid we found the road stopped by a train which was thrown off the line. This led to a stoppage of four hours, and the loss of the train *en correspondance*, which should have taken us to Bordeaux. The passengers slept last night in the carriages at Hendaye, opposite Fontarabia. Busk and I with Thomas had beds in a roadside inn."

"BORDEAUX, 21st, 9 P.M.

"We came here this evening. The stoppage has lost us a day, and I fear a rendezvous with Lartet and Christy at Montauban and Bruniquel. We leave to-morrow for Bruniquel, from which Busk returns direct to London. . . .—With love to all, my dear Grace, your ever affectionate uncle, H. FALCONER."

In the untoward accident on the Sierra Morena Dr Falconer contracted a chill, which developed into rheumatic fever and ended fatally on the 31st January 1865, to the heartfelt sorrow of his relatives and numerous friends. Of him my sister writes:<sup>1</sup>—

"There was no naturalist who possessed Hugh Falconer's vast palæontological and botanical knowledge combined (botany had been his profession), no one more ready of access or more willing to co-operate and impart that knowledge. His boyish mirth and racy originality made him a brilliant companion, while underlying all the glee and laughter-provoking sallies there was the deeply affectionate and genial nature which drew Joseph Prestwich as with a magnet."

<sup>1</sup> Life and Letters of Sir Joseph Prestwich. Written and Edited by his Wife. P. 195.

The following letter was written on the occasion of Grace's engagement to Mr (afterwards Sir Joseph) Prestwich, the distinguished geologist:—

*G. M'Call to A. M'Call.*

“21 PARK CRESCENT, PORTLAND PLACE,  
2nd Dec. [1869].

“MY DEAREST ANNIE,—I must send a few lines to respond and thank you for your dear, affectionate letter. . . . I shall treasure it as long as I live. . . . Mr Prestwich is beloved and respected by every one, and I feel so very happy—not the less so that you all send me your approval and blessing.

“Dr Leckie has just been in, and says what is so true, that if dear Uncle Hugh had been spared he would have been so overjoyed. . . . Tell the dear mother that when her little note comes I shall be so delighted, but I feel happy now through you to have her love and blessing.—Ever, dearest Annie, your affectionate sister,  
GRACE A. M'CALL.”

Their marriage was not long delayed; it took place on the 26th February 1870, in St Marylebone Church, London, a highly valued friend, the Rev. Lomas Miles, rector of Coreley, Salop, officiating. With Mr Miles's daughters, especially Mrs Joyce, Mrs Prestwich and her sisters had been on terms of intimacy for many years. An account of the wedding tour to France and Italy, and of the after-tenor of their life at Darent-Hulme and subsequently at Oxford, is to be found in Lady Prestwich's memoir of her husband. That their married life began auspiciously at Darent-Hulme appears in the same biography:—

“They reached home in time for the outburst of the

early summer, for the blossoming of the may, the lilacs, and laburnums." And again in a letter: "When we arrived on Friday the bells rang a merry peal, and the villagers assembled, cheering and throwing flowers on us. At the house door there was a crowd of girls with lapfuls of primroses and wallflowers, with which they strewed the passage and stairs. On Sunday the bells rang between services, which took us quite by surprise."

Darent-Hulme, situated above the pretty village of Shoreham, and five miles from Sevenoaks, was originally a dry chalk down, devoid of trees, and apparently without water, but a well 168 feet deep had been sunk, and under Mr Prestwich's personal direction the ground was thickly planted with numerous varieties of shrubs and trees: a picturesque house illustrative of geology had also been built.

In 1874 Mr Prestwich, who had retired from city life, was nominated Professor of Geology at Oxford, an appointment held by him until 1887. A house was taken first in Broad Street, and latterly in St Giles, Oxford; but the long vacation was spent at Darent-Hulme, where Professor and Mrs Prestwich had now an additional tie in the friendship of the Rev. J. and Mrs Lovett Cameron and their family at Shoreham vicarage. The rose season at Darent-Hulme had a special charm for Grace Prestwich. Eager for others to share in the delight they gave her, boxes of roses were constantly posted by her to sick friends, so that the rose-trees were often entirely denuded of blossoms. The garden and gardening plans were, with this exception, left almost entirely in her husband's hands. Christmas generally found them with Professor Prestwich's brother-in-law and sister, Mr and Mrs

Russell Scott, at the Manor House, Old Eastbourne, and they were constant and welcome guests at Mr Charles Falconer's, the "best of relatives," whose house in Park Crescent, London, always open to them, was like a second home to his niece. Visits to France, to the Channel Islands, to Scotland, Wales, and the south coast of England, are also recorded in the 'Life and Letters of Sir Joseph Prestwich.' With regard to their reception at Oxford, Mrs Prestwich writes in the same volume that it "was the kindest, and not from the science side only, but from all sides. They soon came under the spell of the ancient home of learning, and perceived that there was a subtle essence in its mental atmosphere which made it somewhat different from any other. They felt the fascination of the place and were sensible of their privilege." She refers to the "most hospitable kindness" with which they were received by Dr (afterwards Sir Henry) Acland and Mrs Acland "of saintly memory," and to the friendly welcome of the Dean of Christchurch and Mrs Liddell. As a member of council, Grace Prestwich took an active interest in the establishment and prosperity of "Somerville Hall," now "Somerville College," and in "The Sarah Acland Home for Nurses," from its foundation: she was also a regular visitor for some years at the Oxford Infirmary, where the surgical ward for men and boys was allotted to her. Not only was Professor Prestwich ably assisted by his wife in the publication of his standard work, 'Geology, Chemical, Physical, and Stratigraphical,' but her intelligent help was of great value to him in the preparation of scientific papers as well as of geological lectures and diagrams. She was also a constant attendant at his lectures in the Museum. The country round Oxford

was carefully studied by Professor Prestwich in anticipation of his annual geological excursions, and his wife never failed to accompany him on these expeditions. Apart from the geology of the district, they both delighted in the historical associations and old churches, and never went past a church without endeavouring to see it, and it was while geologising in the Chilterns (1882) that Mrs Prestwich's attention was arrested by the old-world village and Almshouses of Ewelme.

Of Mrs Prestwich's two novels, the first, 'The Harbour Bar: A Tale of Scottish Life,' was published anonymously by Messrs Macmillan in 1875, a cheaper edition in one volume following next year; the other, 'Enga,' appeared in 1880. Elsie, the heroine of 'The Harbour Bar,' is a lifelike study of a true-hearted woman; there are some charming pictures of child life as well as much genial humour throughout the book, and it is with a firm yet sympathetic hand that Grace Prestwich portrays Scottish customs and different types of Scottish character. Above all, we have a powerful and heart-stirring scene in her rendering of the storm, when the fierce war of the elements is contrasted with the hopeless, repressed anguish of the principal sufferers. Many of the descriptions of scenery in both novels are taken from Mrs Prestwich's recollections of her early life, and in the quotation with which the first chapter of 'The Harbour Bar' begins, we have an exact expression of her own patriotic sentiments:—

“Land of brown heath and shaggy wood,  
Land of the mountain and the flood,  
Land of my sires! what mortal hand  
Can e'er untie the filial band  
That knits me to thy rugged strand!”

The subjoined passage from a review of 'Enga' is

equally applicable to 'The Harbour Bar': "Altogether there is a high tone in the book, which is as healthy as the wind-swept braes and foaming rivers which the author can describe so well."

The year 1878 left sad memories with Grace Prestwich, the death of her beloved mother on the 5th of January causing a blank in her life never to be filled up. With reference to this bereavement she writes to Miss M'Call: "Your letter, so loving, so true, and so full of affection for Her, was like balm to us all. I often think with gratified feeling of your love for Her."

Six "Chapters on Geology" were published in 'Every Girl's Magazine' for 1880, and a paper on "Somerville Hall" was contributed by Grace Prestwich to the same periodical for April 1882. At one time it had been her intention to reprint these "Chapters on Geology" in book form with additions; but owing to numerous other occupations, and the state of her health, that task was left unaccomplished.

So blameless was her life that an old servant of a friend expressed astonishment that Mrs Prestwich had not been taken away to a better world; at last, however, she solved the difficulty and exclaimed, "Well, Mrs Prestwich must just have been left to us on earth as a specimen"! Could praise go much further? Grace had remarkable powers of conciliation, and when differences arose, and committee meetings waxed stormy, an appeal would be made to her, as to one whose words fell like "oil upon the waters." Punctuality, which she had probably cultivated with the desire of sparing the servants, and those associated with her, unnecessary trouble, seemed to become a second nature, and through life order and mental activity were leading features in her character. The writer of this sketch remembers

a short essay partly composed and written on a journey from Edinburgh to London; and she has a distinct recollection of Grace in evening toilet in the drawing-room at Oxford awaiting dinner guests, but occupied until the last moment with original MS., or it might be copying the Professor's lectures. On hearing the door-bell Mrs Prestwich would quietly remove the MS., and, drawing on her gloves, was ready to receive the guests as soon as they were announced, and to appreciate to the utmost the cheerful companionship and new trains of thought. During the last years of her life, when the literary work of the morning was over, reading, of which she never seemed to weary, became a constant resource and recreation, in some measure taking the place of former social enjoyments, from which failing health now, alas! debarred her.

Grace had a great regard and esteem for Miss Madeline Shaw Lefevre, Lady Principal of Somerville Hall; and a friendship with Mrs and Miss Weld, the sister and niece of Lady Tennyson, led to an invitation to stay at Aldworth. Unfortunately her husband's health had become so precarious that Mrs Prestwich felt obliged to decline it; but she always regretted that they had not gone to some neighbouring inn for a night, so as to be introduced to the poet and Lady Tennyson. Mrs Craik (Miss Mulock) also expressed a wish to make Grace's acquaintance, and drove over in her pony-carriage from Shortlands by appointment, on a summer day, to spend a couple of hours at Darent-Hulme. One of Grace's numerous Oxford friends was Mrs Rolleston, niece of Sir Humphry Davy, and the wife of the brilliant speaker, Dr George Rolleston, Linacre Professor of Physiology.

Mr Prestwich resigned the Chair of Geology in 1887;

but although Darent-Hulme was now their only home, the geologist and Mrs Prestwich until 1894 spent some months of the year in London with the sisters of the latter. To the intense gratification of a bedridden aunt, an octogenarian, who was one of the family party at Park Crescent, Grace, if absent, always wrote an extra weekly letter, which by her request was not given to the invalid until Sunday morning. Never was letter more gratefully appreciated than by the old lady, whose strict observance of the Sunday, as a rule, did not permit of any lighter literature than unlimited sermons upon that day.

The honour of knighthood was conferred upon the geologist at the New Year 1896, but Sir Joseph did not live long to enjoy it: an illness of eight months, through which his wife tended him with unwearied devotion, terminated fatally at Darent-Hulme on the 23rd June 1896. The kind sympathy of relations and friends was very helpful to Lady Prestwich in her sorrow, especially that of the Rev. R. Ashington and Mrs Bullen at Shoreham Vicarage; but the grief and fatigue incidental on her husband's long illness and death seriously affected her, accelerating the heart disease from which she suffered. But although for some years an invalid on the sofa, her days were fully occupied, and sufficient time and strength were yet left to complete her 'Life and Letters of Sir Joseph Prestwich,' published by Messrs Blackwood in June 1899. This memoir of the geologist was very favourably reviewed by the press, and the writer of a notice in the 'Times'<sup>1</sup> describes the story of the life of Sir Joseph Prestwich as "lovingly and adequately told by his widow in this volume, which will delight all who

<sup>1</sup> The Times, August 1, 1899.



knew the man and attract all who share his enthusiasm for the science of which he was so great a master." The critic goes on: "It has, too, a certain moral and dramatic interest, because it shows how a man whose bent was science and whose occupation was business could reconcile those two conflicting interests and pursue the ideal without neglecting the practical. But, apart from this, the record of his life is one which the non-geological reader will be tempted to pronounce uneventful. It was no doubt a misgiving of this kind which made Lady Prestwich hesitate to undertake a biography of her distinguished husband. 'It might not have been attempted,' she tells us, 'but for the encouragement and prompting of Sir John Evans, who urged that I could best tell of the home life, and that the scientific publications, by the subject of the memoir, had already spoken for themselves. I accordingly decided to do my utmost in what, it is needless to say, has been altogether a labour of love.' All the scientific and personal friends of Prestwich will acknowledge that Sir John Evans was well advised and Lady Prestwich very happily inspired. She has told the story of the home life in a perfectly simple and unaffected fashion, and made a very charming picture of it, although it presents no very salient features beyond those of a loving nature and a well-balanced mind combined with an intense scientific enthusiasm. The story of Prestwich's scientific career is, as Lady Prestwich says, best told in his own writings; but she adds to it that personal charm which belongs to the record of his many and lasting friendships, and which finds expression in his familiar correspondence."

A fragment from Grace's MSS. requires no comment:—

"As we advance in age our view of life necessarily

becomes more or less retrospective. We look back on the years that have fled—those landmarks in the passage of time, and only then, alas! it may be, we begin to appraise the world and the things of the world at their true value. When we entered on the journey we were buoyant with hope and eager expectancy; there was a charm for us in the mystery of the untried road which only experience could unveil, and life seemed to us then as if unending, as if it must last for ever. But now, as its limits lessen, we are aghast to find that for the short space which remains to be traversed, Time, which before seemed illimitable, seems to us now to hurry on at an accelerated pace. We would fain take breath and arrest its rapid passage, but it is inexorable, and every year now glides on faster than the one before it. How familiar the saying is among the elderly and the aged, ‘I cannot understand how it is the years go so fast now—ever so much faster than they did in my young days.’ And now that the close is near, we naturally ask, What have we accomplished in our life? What use have we made of our talents and opportunities? What track have we made, or is our journey to be compared to the passage of a frail bark over the waters, which leaves no trace to tell behind? What work have we done in God’s world? What have we done to promote His glory, and the well-being of our brethren and sisters? Shall we through our personal agency leave the world better than we found it? Or, like brute beasts, shall we go to the grave and leave no impress behind us? Such questions are likely to arise in every thinking mind, and in most cases must be answered in sorrowful consciousness.” . . .

In 1896 Lady Prestwich’s sisters, by her desire, made

Darent-Hulme their home, and different members of Sir Joseph's family, including his sisters, Mrs Tomkins and Miss Emily Prestwich, were ever welcome guests, as were many kind neighbours; friends too, living at a distance, would considerately come, if only for a glimpse of the invalid, but all hospitalities were of the briefest. It was a cause for regret during Grace's last illness that Mrs James M'Call was unable to arrange for a short farewell visit with her son and daughter. Sir John and Lady Evans also, hearing of her precarious state, arrived one day at Shoreham station, but too late—the gentle spirit had that morning entered into rest. *Nil admirari* was not one of Lady Prestwich's mottoes; children were to her "like little angels," and after seeing a beautiful neighbour, she would compare the unconscious visitor to some lovely flower which inspired her with similar admiration and pleasure. One of her last drives was to soothe a dying woman in the neighbourhood, for the poor and suffering were never forgotten by her.

In the early summer of 1899 the horizon was narrowing for Lady Prestwich; little enjoyments were one by one relinquished, and the afternoon drive through the Kentish woods, bright with hyacinths and at that season ringing with the songs of birds, was now an uncertainty. At last the garden chair was no longer wheeled out under the *Cedrus atlantica* on the lawn, where the birds and squirrels were wont to come as if to welcome and greet her, and from which she had a wide view of the peaceful valley of the Darent. At last she was obliged to resign the secretaryship of the Shoreham Nursing Association, which she had held since 1893, when, by her exertions and those of Miss Helena James, a parish Jubilee nurse had been ap-

pointed for the villages of Shoreham and Otford. Although compelled to give up the society of her friends and of little children in whom she delighted, Grace's affection for them was not clouded : as long as strength lasted she kept up letter-writing ; then letters were dictated ; and finally loving messages alone were penned by other hands, but these continued to the last day of her life, and were very solemn and touching. Lady Prestwich had always set a high value on sympathy and friendship, clinging to them through life, and Shakespeare's noble lines—

“The friends thou hast, and their adoption tried,  
Grapple them to thy soul with hooks of steel,” —

fitly represent her mental attitude in this respect. Although so suffering, she was to the end informed of any inquiries or letters from residents in the district, and fully appreciated the feeling that prompted them : they were very dear and welcome to her. Among these neighbours may be mentioned Lady Collet and Mrs Collet, Mrs Chaplin, Lady Dunsany, Mrs Norman, Mrs Turner—the friend of her girlhood—Lady Udny, the Misses Waring, and many others. Ever a charming companion and eager for the happiness of those around her, in small details as well as in more serious affairs, Grace would endeavour by playful remarks to lighten the gloom of the sick-room. She and her sisters were now sensible of the great change inexorably approaching, and words of affection to them and of loving trust in her Saviour were often upon her lips, as well as the verses of a favourite hymn beginning—

“Why those fears ? Behold, 'tis Jesus  
Holds the helm and guides the ship.”

With sorrowing hearts they watched beside her until

the morning of the 31st of August, when light ineffable dawned on the sufferer, leaving as it brightened the impress of heavenly joy and peace upon her features. All that is mortal of her rests beneath the granite cross erected to her husband's memory in the quiet churchyard of Shoreham. In the absence of the Rev. Norman Radcliffe, the funeral service was conducted by the Rev. R. A. Bullen<sup>1</sup> and the Rev. T. C. Wild, the choir singing the hymn—

“How bright these glorious spirits shine.”

The following letter appeared in the Shoreham Parish Magazine for October 1899 :—

“MY DEAR FRIENDS,— . . . During the vicar's absence a sad event has overtaken us in the death of Lady Prestwich. Although every one knew that she had been very ill for some time, yet when the end came we all felt shocked. Her death, coming so soon after Mrs Mildmay's, made the parish feel to be in mourning, and seem empty and cold. We have all been accustomed to think of Lady Prestwich as a gentle saint in our midst, and we feel the poorer for her departure. But it is consoling to think that she is now in a happier world, and surrounded by a warmer love than can be experienced here. We cannot help thinking of her when we pray in the Church Militant Prayer: ‘And we also bless Thy holy name for all Thy servants departed this life in Thy faith and fear; beseeching Thee to give us grace so to follow their good examples, that with them we may be partakers of Thy heavenly kingdom.’—Yours very truly,

T. CECIL WILD.”

<sup>1</sup> Former vicar of Shoreham, Kent.

This short biographical sketch now closes with a tribute to Lady Prestwich's memory from the anniversary address given by Mr Whitaker, President of the Geological Society for 1899 :<sup>1</sup>—

“I may fairly conclude these obituary notices with a reference to a person never enrolled among our Fellows, prevented from being so, indeed, by sex alone. The niece of Falconer, the wife of Prestwich, lived little more than long enough to see the production of the labour of her latest years, the *Life* of her husband. This work of love is one of the most notable of the geological books of last year, and it gives an account of the life and labours of one of our greatest geologists, illustrating the way in which he was led to take up those various lines of research wherein he so highly distinguished himself.

“Grace Anne, Lady Prestwich, died on August 31, 1899, at the age of sixty-six, to the sorrow of all who knew her.”

<sup>1</sup> Quart. Journ. Geol. Soc., vol. lvi. p. lxi.

I.

JOURNEYS IN FRANCE AND ITALY





## RECOLLECTIONS OF M. BOUCHER DE PERTHES :

BEING SOME ACCOUNT OF THE HISTORY OF THE  
DISCOVERY OF FLINT IMPLEMENTS.

M. BOUCHER DE PERTHES was no geologist. He himself, in one of his numerous letters to an English friend, disclaimed any right to the title in these words, "*Je ne suis pas un savant et en géologie moins qu'en autre chose.*" Yet his name is so inseparably associated with the discovery of flint implements in beds of geological age, that a few notes of a day spent with him before these flints were generally accepted and recognised as the handiwork of man may be of interest, now that their artificial origin is established, and their significance in being something more than simple natural objects is understood. Unfortunately, our antiquarian of Abbeville<sup>1</sup> had given forth his geological theories before he had found his flint implements. Hence, when his far-sighted perseverance was rewarded by the discovery of works of primitive man—which he had over and over again predicted—geologists gave neither heed nor attention to his announcements, and he had to endure no little ridicule and neglect.

Jacques Boucher de Crèvecœur de Perthes was not

<sup>1</sup> Abbeville is situated in the Somme valley, north-west of Amiens.

always known by the name of De Perthes. He was born at Rethel in 1788, and it was not until the 16th September 1818, during the reign of Louis XVIII., that a royal decree authorised him to assume his mother's name of De Perthes, "she being the last descendant of Pierre de Perthes and Marguerite Romée, cousin-german of Joan of Arc." His father held office in the administration of the customs, and at the age of sixteen the young Jacques was enrolled in the same service, and was sent to Marseilles. After a few months there, he resided successively at Genoa, Leghorn, and in several German towns, returning to France in 1811, after having been engaged in missions connected with his service to different countries. For a short time he was sub-director of the Paris customs, and finally in 1825 succeeded his father as director of the *Douane* at Abbeville, an office which he filled until his retirement from the service in 1853. This post was then cancelled, having only been held by father and son. During nearly thirty-six years he filled the presidential chair of the Société d'Emulation at Abbeville, the Memoirs of which testify to his unremitting industry and to the wide range of subjects on which he wrote. He was rarely absent from the meetings of this society, except when he traversed Europe to collect the materials which he gave to the world in his many books of travels. His 'Hommes et Choses' appeared in four volumes; the 'Voyage à Constantinople par l'Italie, la Sicile, et la Grèce' came out in two volumes; 'Voyage en Danemarck, en Suède, et en Norvège,' as well as 'Voyage en Espagne et en Algérie en 1855,' 'Voyage en Russie en 1856,' and also 'Voyage en Angleterre, Écosse, et Irlande en 1860,' besides others, appeared in single volumes. He also published his presidential addresses to the Société d'Emulation, likewise several



M. BOUCHER DE PERTHES.



discourses to Abbeville workmen, such as "On Probity," "On Courage, Bravery, &c.," "On the Education of the Poor," "On Poverty," "On Obedience to the Laws," "On the Influence of Charity," "On innate Ideas, Memory, and Instinct," and several on questions of political economy.

In many respects M. Boucher de Perthes was a man in advance of his time. Besides his addresses to workmen he was engaged in numerous philanthropic schemes, and he was a warm advocate for the settlement of international quarrels by arbitration, at a time when few Frenchmen held such opinions. His versatile pen was never idle. We know little more of his several tragedies and comedies than their names. No man was ever more possessed by the *cacoethes scribendi*. There is, in short, scarcely a subject on which he did not touch—from plays, poems, romances, satires, and ballads, on to "Spontaneous Generation" and to that *cause célèbre*, "The Human Jaw of Moulin Quignon." But he was essentially an archæologist and antiquarian. Thus at the date of our visit to Abbeville, now [1895] nearly seven-and-thirty years ago, M. Boucher de Perthes was known in France as a voluminous author of light literature, but chiefly as a collector and writer on antiquities.

The first work in which he predicted the certainty of traces of industrial remains of primitive man coming to light was one in five volumes, entitled 'De la Création, Essai sur l'Origine et la Progression des Êtres,' which appeared in 1838. Yet long before that date he had a preconceived idea of the discovery he was about to make, the origin of which is recorded in the first volume of his 'Antiquités Celtiques et Antédiluviennes' in 1847 :—

It was on a summer evening at Abbeville, while examining a sand-pit at the end of the Faubourg Saint Gilles, *that the idea*

*occurred to me* that instruments cut out of flint might be found in Tertiary deposits. However, none of those about me exhibited the slightest trace of workmanship. Some were still encrusted, others rubbed and worn round. Here and there a broken one, yet without the least trace of man's labour. This occurred in 1826. Several years passed by, and though I examined several localities, I discovered nothing. At last one day I thought I recognised the work of man on a flint of about 12 centimètres in length, from which two pieces had been chipped off. I submitted it to the examination of several archæologists: not one could see in it anything more than a common flint stone, accidentally broken by the workman's pick. In vain I showed that the fracture was very ancient, and that the bed from which it was taken had never before been disturbed. . . .

My convictions remained unshaken. I continued my search, and soon discovered another, similar to the first, and cut in the same manner: with great joy I tore it from the bed in which it lay half-buried. I thought that the attention of my judges would be awakened by the coincidence,—they were not even willing to look at it.

I discovered a third. In my own opinion this amounted to absolute proof. They did not doubt but that the flint was really taken from an undisturbed bed of diluvium; but as to the workmanship, they discredited it, and concluded that it had been broken like the others by the same cause—that the fractures were all caused in the same manner. I then discovered several large implements (*haches*). Here the evidence of man's workmanship, I thought, should be clear to every one; but still it was only clear to myself. One day a fine axe in flint was brought to me: in this case the workmanship was incontestable, but I had not seen it taken from its bed. The labourers assured me of the fact; and its colour, and the remains of the sand still adhering to it, were sufficient evidence. Yet these incredulous persons insisted that it had not been so taken, and as a reason gave that it could not have come from the diluvium. I then recommenced the search for myself, &c.

It will thus be seen that M. de Perthes' anticipations

had put him upon the right track, and when in 1832 a trench was being excavated outside the ramparts of Abbeville for the construction of a canal leading from the Hocquet Gate to the Rouen Gate, he was all eagerness to inspect the excavations, and to procure any relics that might be exhumed. Two Celtic *haches* with handles of deer-horn were found by the labourers, and though only Neolithic or of comparatively recent date, the discovery of them roused his enthusiasm to the highest pitch.

We hear of no other extensive excavations until 1837, when works were resumed for the cutting of trenches for the defence of the place. It was then that M. Boucher de Perthes suggested that a Commission should be appointed to watch the excavations, and to secure any specimens or relics that the workmen might come upon. Many of the members of the proposed Commission happened to be busy men, others were absent; their numbers dwindled away until the Commission became represented by M. Boucher de Perthes alone. He had, however, every assistance from the engineer officers directing the works, and he made a point of purchasing any fragments that the workmen might find, besides offering an extra reward for each specimen of any interest.

A series of thin beds of shingle or pebbles, alternating with peat, were exposed, and underneath the lowest was one of carbonised wood. Below this last was a sort of open platform made of small joists of oak roughly squared, all unmistakably the work of human hands. There was nothing remarkable in the superposition of these beds, which were distinctly within the human period; but the exposure of them was interesting, and they incited M. de Perthes to under-

take on his own account excavations in the older undisturbed gravels of the valley. The cuttings into the shingly beds at the Rouen Gate acted as a spur—if spur were needed; and when the diggings into the older gravels were begun, M. de Perthes was confident that he was on the point of some great discovery. He employed his ample fortune liberally, and when the workmen found the first old flint implement, he promised a reward of double the amount for the next, provided that he could see the specimen *in situ*.

The first announcement of his discovery of a palæolithic flint implement in gravels of the age of the Drift was in a work entitled ‘*De l’Industrie primitive, ou les Arts et leur origine*,’ published in 1846. In a description of the gravels of Menchecourt, he records the occurrence of this worked flint implement, and asserted that it was found among remains or fragments of bones of *elephant*, *rhinoceros*, and *other extinct animals* at the bottom of a bed of gravel underlying many *mètres* of modern deposits. The inference was clear. It made it probable that man in this district had been a contemporary of these extinct animals, and M. de Perthes, in recording the fact, announces with enthusiasm that he felt impelled to prosecute his researches with ardour, as he was about to unfold a page of history hitherto unread. In 1842 to 1843, three other flint implements were exhumed from the same locality, thus confirming and corroborating the evidence furnished by the first specimen. As the excavations were carried on further, our antiquarian by degrees amassed more and more of his *pièces justificatifs*, being confident in the hope that some day—maybe some far-off date—in spite of the



sneers of an unbelieving public, the facts would ultimately be acknowledged, and would speak for themselves.

In 1849 the first of the three volumes of his 'Antiquités Celtiques et Antédiluviennes' appeared, announcing that numbers of rudely worked flint implements had been met with in the old undisturbed beds of gravel. The two districts which yielded the greatest harvest were Amiens and Abbeville; the first embraced St Acheul and Moutiers, while the Abbeville district included Menchecourt, St Gilles, and Moulin Quignon. He repeated his assertion that these worked and chipped flints, to which he assigned so high an antiquity, were found at depths varying from 9 to 16 feet, and in association with bones of extinct animals. His announcement was altogether at variance with the preconceived and accepted axioms on the geological age of the human race; he was notorious for having previously propounded theories regarding the antiquity of man without any facts to support them; therefore it was not surprising that, when he did hit upon a great discovery, he could not obtain a hearing, and was treated as a wild visionary. One reason of the general unbelief was that the figures in the book are only in outline, and are mostly so badly executed, and include so many that show no sign of work, that they failed to do justice to the specimens. Yet, with a patience which at this far distant date one cannot think of without admiration, he urged his countrymen to put his startling theories to the test, and make excavations for themselves in unbroken ground; but he was only laughed at, and men of science held aloof. Nevertheless, undaunted he worked steadily on, accumulating a large and miscellaneous collection.

In England few men of science had heard mention of his name. Still there was one English geologist who knew of the reported discovery of so-called worked flints, and who had it in view to visit Abbeville at some convenient season, and judge of it for himself. Mr [afterwards Sir Joseph] Prestwich was apparently the only one who, from his knowledge of the geology of the Department of the Somme, thought it a fit base for investigation. Other engagements, however, prevented him carrying out this project, and in the meantime his friend, the late Dr Hugh Falconer, who had been engaged with him in the joint investigation of Brixham Cave near Torquay, took the opportunity in passing through Abbeville of paying a visit to M. de Perthes, and inspecting his collection, though time did not allow him to visit the localities where the implements had been found. He was so impressed with the statements of M. de Perthes, and with the character of the implements, that he at once wrote to Mr Prestwich and urged him to proceed to Abbeville. With characteristic generosity he invariably assigned the precedence to this friend, saying, "What I did was to stir up the embers of your interest in the matter into a quick flame."

It is right, however, to mention that in France there was an exception to the general disbelief of the flints having been fashioned by the hands of man—Dr Rigollot of Amiens, who had been very antagonistic to the views of M. de Perthes, but whose opinions underwent a complete change after he had personally examined the ground and the evidence. On his return to Amiens he discovered similar flint implements in the great gravel-pits at St Acheul near Amiens, which had been excavated through and below an old Gallo-Romano

burying-ground. Dr Rigollot ultimately was so convinced of the facts that he became one of the strongest advocates for their recognition, and his interesting memoir upon 'Instruments en Silex trouvés à St Acheul,' published in 1855, was a special pleader on their behalf: but Dr Rigollot was not known as a geologist, and disbelief still prevailed.

Before giving an account of our reception at Abbeville, we would fain notice an attractive portrait in our possession. It is the lithographic likeness of a very handsome man; and as it is dated 1831, it must have been taken when M. de Perthes was in the prime of life. There does not seem to be much resemblance between the original as we knew him and this picture, if we except the large clear straight eyes, a certain regularity of feature, and an expression of benevolence and placidity common to both. But we only saw the septuagenarian, whereas this likeness must have been taken when he was in his forty-third year. A profusion of curls cluster about the high forehead and temples, and the drapery, which French artists know so well how to adjust for pictorial effect, consists of a velvet trimmed cape, thrown back so as to show the collar of an embroidered uniform, and the orders which are displayed on his breast. To the end of his days he took pleasure in presenting this portrait, and this only to his personal friends. He never would be drawn nor photographed when advanced in years.

It was on a bitterly cold morning on the 1st of November 1858 that we arrived at Abbeville. We were on our way to Sicily, where Dr Falconer wished to explore the bone-caves, and other caves on the shores of the Mediterranean, and the writer had the privilege of accompanying him as secretary. We were a day

behind the date fixed for an interview with M. de Perthes; therefore, taking the earliest train from Boulogne, we deposited our luggage at the old "Tête de Bœuf" on arrival at Abbeville, and hurried on through streets of pointed gables, where the sun had not had time to melt the crisp frost of the night—on to the house in the Rue des Minimes. It was a large old building, which stood back from the street in an iron-railed enclosure; but our dismay was great to see at a first glance that it was shuttered and blinded as if untenanted, and only one window by the door was open, a *calèche* with luggage standing as if for a traveller on the point of departure. Five minutes later, and another hand would have had to chronicle the first recognition by English men of science of the old flint implements of the Somme Valley. M. de Perthes had made a point of coming in from the country for the interview on the previous day, and thinking that we had passed on our way, he was about to return there.

We were ushered into a small room on the ground-floor, which was crowded with examples of medieval art. There was no flint implement visible: the walls, from ceiling to floor, were covered with old pictures, specimens of bronzes and brasses, beautiful carvings, prominent among them all being a great ebony crucifix. In a few minutes M. de Perthes entered, and gave us an eager welcome. The *calèche* had been countermanded, shutters unbarred, and venetians thrown open,—our arrival, in short, had intercepted the journey. He was just upon seventy, vigorous and active, not at all betraying his years. He looked a man carefully preserved: the thick brown wig was unmistakably a wig, and there was a suspicion—nay, a certainty—of artificial colouring about his complexion. He showed

us his private study, which opened off the small outer room, and which was literally crammed with curiosities. The house from garret to ground-floor was a great museum, the staircase walls lined with paintings, and room after room devoted to one or other branch of art, principally medieval. His collection of curios was very cosmopolitan, much having been amassed doubtless while on foreign travel. The roomy old house was absolutely filled with relics and treasures of bygone days, with not a single habitable-looking or comfortable room in it, and must have been a dreary abode for any other than its owner.

Finally, we were taken to the geological room or gallery, containing the flints which were the object of our journey to Abbeville. The collection was a magnificent one and full of interest, and our host was almost breathless with excitement in detailing the circumstances in which each specimen had been found. The remainder of that memorable day was spent in this gallery, but it nearly finished the unfortunate secretary. The gallery was like an ice-house, there was no fire, and the very handling of the flints was freezing work. So much has been written and published about this collection that I need only allude to it, and will transcribe the letter which Dr Falconer wrote from the "Tête de Bœuf" that same evening.

ABBEVILLE, 1st Nov. 1858.

MY DEAR PRESTWICH,—As the weather continued fine, I determined on coming here to see Boucher de Perthes' collection. I advised him of my intention from London, and my note luckily found him in the neighbourhood. He good-naturedly came in to receive me, and I have been richly rewarded. His collection of wrought flint implements, and of the objects of every description associated with them, far exceeds anything I

expected to have seen, especially from a single locality. He had made great additions since the publication of his first volume, in the second—which I have now by me. He showed me “flint” hatchets which *he had dug up with his own hands mixed indiscriminately* with the molars of *E. primigenius*. I examined and identified *plates* of the molars—and the flint objects, which were got along with them. Abbeville is an out-of-the-way place, very little visited, and the French *savants*, who meet him in Paris, laugh at Monsieur de Perthes and his researches. But after devoting the greater part of a day to his vast collection, I am perfectly satisfied that there is a great deal of fair presumptive evidence in favour of many of his speculations regarding the remote antiquity of these industrial objects, and their association with animals now extinct. Monsieur Boucher’s hotel is from ground-floor to garret a continued museum filled with pictures, medieval art, and Gaulish antiquities, including antediluvian flint knives, fossil bones, &c. If during next summer you should happen to be paying a visit to France, let me strongly recommend you to come to Abbeville. You could leave the following morning by an 8 A.M. train to Paris, and I am sure you would be richly rewarded. You are the only English geologist I know of who would go into the subject *con amore*. I am satisfied that English geologists are much behind the indications of the materials now in existence, relative to this walk of post-glacial geology, and you are the man to bring up the leeway. Boucher de Perthes is a very courteous elderly French gentleman, the head of an old and affluent family,—and if you wrote to him beforehand, he would feel your visit a compliment, and treat it as such.

I saw no flint specimens in his collection so completely whitened through and through as our flint knives—and nothing exactly like the mysterious hatchet which I made up of the two pieces. What I have seen here gives me still greater impulse to persevere in our Brixham exploration. . . .

H. FALCONER.

The result of this letter was that Mr Prestwich in April 1859 made his first visit to Abbeville, where he was shortly joined by some geological friends whom he

had invited to meet him there, and on the 26th of May his paper, entitled 'On the Occurrence of Flint-implements, associated with Remains of Extinct Mammalia, in Undisturbed Beds of a late Geological Period,' was read to the Royal Society.<sup>1</sup> This paper made a great sensation, demonstrating as it did that a large portion of the flints in M. de Perthes' collection were of human workmanship, and pointing out their undoubted geological position. We shall quote one or two passages from the abstract of this paper:—

At Abbeville the author was much struck with the extent of M. Boucher de Perthes' collection. There were many forms of flints in which he, however, failed to see traces of design or work, and which he should only consider as accidental; but with regard to those flint-instruments termed 'axes' (*haches*) by M. de Perthes, he entertains not the slightest doubt of their artificial make. They are of two forms, generally from 4 to 10 inches long, . . . and were the work of a people probably unacquainted with the use of metals. . . . The author was not fortunate enough to find any specimens himself;<sup>2</sup> but from the experience of M. de Perthes, and the evidence of the workmen, as well as from the condition of the specimens themselves, he is fully satisfied of the correctness of that gentleman's opinion, that they there also occur in beds of undisturbed sand and gravel.<sup>3</sup> . . .

With regard to the geological age of these beds, the author refers them to those usually designated post-pliocene (Pleisto-

<sup>1</sup> Proc. Royal Soc., vol. x. p. 50.

<sup>2</sup> This only refers to the large worked *haches*. On his first visit to Menchecourt, the day after his arrival at Abbeville, he was fortunate enough to obtain, in one excavation he had made to a depth of about 20 feet beneath the surface, several fine flint flakes with large bulbs of percussion, in a bed with abundant remains of the mammoth and other extinct mammalia.

<sup>3</sup> Subsequently, Mr Prestwich was summoned by a telegram from Paris, to which he responded by going to St Acheul and finding an implement *in situ*.

cene), and notices their agreement with many beds of that age in England.

Finally, Mr Prestwich stated that he

purposely abstains for the present from all theoretical considerations, confining himself to the corroboration of the facts—

1. That the flint-implements are the work of man.
2. That they were found in undisturbed ground.
3. That they are associated with the remains of extinct Mammalia.

4. That the period was a late geological one, and anterior to the surface assuming its present outline, so far as some of its minor features are concerned.

He does not, however, consider that the facts, as they at present stand, of necessity carry back Man in past time more than they bring forward the great extinct Mammals towards our own time, the evidence having reference only to relative and not to absolute time; and he is of opinion that many of the later geological changes may have been sudden, or of shorter duration than generally considered. In fact, from the evidence here exhibited, and from all that he knows regarding drift phenomena generally, the author sees no reason against the conclusion that this period of Man and the extinct Mammalia—supposing their cotemporaneity to be proved—was brought to a sudden end by a temporary inundation of the land: on the contrary, he sees much to support such a view on purely geological considerations.

The effect produced by this paper was very great. Before writing it, Mr Prestwich had been joined by Mr (now Sir John) Evans, and together they had examined the flints and gravels of Amiens and Abbeville. Both being experts in different departments—one from his practical knowledge of geology, especially of the more recent deposits; and the other holding the foremost rank in archæology—their joint opinion carried great



weight. Thus when their belief became public, that M. de Perthes had made an important discovery, and that a large proportion of the flint implements in his collection were what he had claimed them to be, men of science on both sides of the Channel cast away their doubts and unbelief, and the Valley of the Somme became at once the shrine for many a scientific pilgrimage. No longer had M. de Perthes occasion to bewail in bitterness of spirit the roughness of the road of science; his labour of years was recognised, and a sudden revolution effected in his favour. His letters of this date, especially those addressed to Dr Falconer and to Mr Prestwich, are expressive of the most lively satisfaction and gratitude.

In the same year we read of another visit by the latter to this flint-bearing district, accompanied by Messrs Godwin-Austen, J. W. Flower, and R. W. Mylne, followed by one from Sir Charles Lyell. Then again, in 1860, Mr Prestwich led a party of his personal friends there, including Mr Busk, Captain (Sir Douglas) Galton, and Sir John Lubbock (Lord Avebury). A host of geologists and others followed on the same errand, amongst whose names we note those of Sir Roderick Murchison, Professors Ramsay, Rupert Jones, Henslow, Rogers, and Mr Henry Christy. That cold November day spent by Hugh Falconer in examining the collection of flints and stones and bones had had far-reaching results.

Nor did French *savants* remain longer unconvinced. Mr Prestwich, satisfied by the success of his paper to the Royal Society, addressed a letter to the French Academy of Sciences, urging the significance of M. de Perthes' discoveries. The effect of this communication was that M. Gaudry, a distinguished member of the

Institute, visited Abbeville and Amiens to examine the implements and the flint-bearing beds. He found several worked flints *in situ*, and his researches confirmed M. de Perthes' statements: his report had the effect in Paris that the paper to the Royal Society had in England, and a French pilgrimage to the valley of the Somme began, headed by well-known members of the Institute, among whom were MM. de Quatrefages, Lartet, Hébert, and many others.

Our antiquarian of Abbeville was now a proud and happy man, and if he did see the attacks of one or two adverse critics in England, who stigmatised him as "that amiable fanatic," he heeded them not: he could afford to smile at such criticisms. One cannot resist giving a quotation from a humorous note of Dr Falconer's. It is dated about a year after that first visit to Abbeville:—

LONDON, 4th Nov. 1859.

MY DEAR PRESTWICH,—I have a charming letter from M. Boucher de Perthes—full of gratitude to 'Perfide Albion' for helping him to assured immortality, and giving him a lift when his countrymen of the Institute left him in the gutter. He radiates a benignant smile from his lofty pinnacle—on you and me—surprised that the treacherous Leopard should have behaved so well.

But although M. de Perthes had thus achieved the ambition of his life, and had been spared to see recognised the importance and value of his collection of the works of primitive man, he had again to experience the "stony roughness of the road of science." In his remarkable collection there was a certain admixture of very carefully worked specimens, in the authenticity of which he himself blindly believed, but which his English friends at once pointed out and unhesitatingly

condemned as spurious. There can be little doubt but that certain of the workmen were dishonest; and lured on by the awards held out to them for every implement found, they thought to do business on their own account, and secretly started a manufactory of their own. These modern imitators copied the implements with considerable exactness, declaring to our antiquarian of Abbeville that with their own hands they had dug them out of the gravel. These forgeries were really deceptive in form and make, but experts were not slow to detect the absence of patina or vitreous glaze, that "varnish of antiquity," and the staining which are characteristic of old palæolithic implements, and which the workmen had not been able to reproduce.

But the culminating interest in the later years of the life of M. de Perthes was his asserted discovery of a "human jaw" with flint *haches* in the *couche noire* of the gravel-pit of Moulin Quignon. The authenticity of this jaw, which he firmly believed to be of the same age as the accepted palæolithic implements, was generally questioned, in face of his asseveration of having extricated it with his own hands on the 28th of March 1863. During all these years of excavations in the gravels, remains of man himself had been carefully looked for, yet never found, and this was the first occasion on which a human bone had come to light.

This asserted discovery excited the most lively interest on both sides of the Channel. Dr Falconer at first had been inclined to believe in the remote age of the jaw, but the "deliberate scrutiny" of the materials which he had carried away from Abbeville compelled him to alter his opinion. To quote his

words: "The French *savants*, the more they went into the case, were more convinced of the soundness of their conclusions; while their English opponents, the more they weighed the evidence before them, were the more strengthened in their doubts."

To settle the question definitely, it was agreed that a deputation of English *savants* should proceed to Paris to confer with representatives of their French brethren. This deputation consisted of Drs Falconer and Carpenter, Messrs Prestwich and Busk, all Fellows of the Royal Society; while the French members, who were largely drawn from the ranks of the Institute, were MM. de Quatrefages the eminent naturalist, Desnoyers the geologist, Edouard Lartet the palæontologist, and Delesse, professor of geology, with M. Milne-Edwards the zoologist as their president. Other distinguished naturalists joined in the investigation, as, for example, our old friend M. Gaudry, M. A. Milne-Edwards, and the Abbé Bourgeois. Sir John Evans was prevented by other engagements from joining in at this stage of the inquiry.

Three meetings of the Commission were held in Paris in May 1863, the proceedings being conducted with as great solemnity as if a human life hung in the balance, and depended on their deliberations. And what a remarkable assemblage!

Unable to agree, they adjourned to Abbeville, when the picturesque aspect of the conference had its crowning touch. Here the members were reinforced by the presence of M. de Perthes, with that also of several distinguished *savants*, such as MM. Hébert, de Vibraye, &c., and the sitting was held at the quaint old "Tête de Bœuf" far into the night. At 2 A.M. they separated, to meet once more a few hours later for the summing

up. The *procès verbaux* of each meeting had been voluminous and minute, but the evidence was so perplexing that in the final verdict there was only unanimity on the first clause—namely, “The jaw in question was not fraudulently introduced into the gravel-pit of Moulin Quignon; it had existed previously in the spot where M. Boucher de Perthes found it on the 28th of March 1863.”

It was a bitter disappointment to M. de Perthes that his English friends, in acknowledging the fact of the human jaw having been truly found as he described, yet refused to admit that it belonged to a remote antiquity. In writing subsequently to Falconer and to Prestwich, he pleaded for his jaw in words that were pathetic. He felt that the halo of his success was dimmed, and never quite recovered from his keen disappointment. Yet he had support among the members of the Commission, who were his distinguished countrymen, and might well have been content to leave the age of this famous human jaw as it rested in the minds of his English friends—in doubt. His early researches had thrown a flood of light upon a subject which had been shunned, so beset was it with difficulties: in obtaining the public recognition of his flint *haches* as the tools and weapons of primitive man, he had achieved a great work.

Could he have been but spared to witness the hold that his discoveries eventually obtained over the public mind! Could he only have foreseen the growth of the subject in seven-and-thirty years, how great would have been his triumph! His indomitable energy and far-seeing sagacity had given the first impetus to a subject which has grown into a new science, and geologists all over the world have set themselves to

seek (and have found) those rudely wrought weapons and tools of flint and stone, fashioned by savage man before the use of metals was known. And the inquiry, once started, has not been limited to the search in the Valley Drifts, of which the flint implements have become historical. The horizon has widened; evidence is forthcoming which shows that flint implements of a still ruder type are found in a Drift on the summit of hills, and to which a much older date has been assigned than to the Valley Drifts.<sup>1</sup> This new field of research is now in course of active exploration, and the discoveries in it already shadow forth results that are remarkable, inasmuch as they point to the still greater antiquity of the human race.

<sup>1</sup> See papers by Prestwich, *Quart. Journ. Geol. Soc.*, vol. xlvii. p. 126, and *Journ. Anthropol. Inst.*, vol. xxi. p. 246.

## EVENINGS WITH MADAME MOHL :

### REMINISCENCES OF A PARIS SALON.

ON turning over the leaves of an old note-book which has been unopened for years, we come upon the name of Madame Mohl. To her we were indebted for great kindness, and the mere mention of her name presents vividly to one's mind that remarkable personality—that quaint, gifted little woman, who for so many years presided over the brilliant gatherings at 120 Rue du Bac. Although our recollections of one who filled so prominent a position in Paris society are very fragmentary, they may not be unacceptable to those who never enjoyed the privilege of her friendship. And to her friends—and they were many—perhaps we may be able to recall some trait of our warm-hearted countrywoman, who was so highly original, so full of kindness, and who exercised a magnetic attraction for all who came in contact with her.

The name also revives the memory of M. Jules Mohl, “the husband of Madame Mohl,” as one who was on brotherly terms sometimes jokingly addressed him, and who can never be forgotten by those who had the honour of calling him friend. Sainte-Beuve's description of him was so true : “A man who was the very embodiment of learning and of inquiry ; the oriental *savant*—more than a *savant*, a sage—with a mind clear, loyal,

and vast ; a German mind passed through an English filter—a cloudless, unruffled mirror, open and limpid ; of pure and frank morality ; early disenchanted with all things ; with a grain of irony devoid of all bitterness, the laugh of a child under a bald head, a Goethe-like intelligence, but free from all prejudice.” German by birth, and one of a band of brothers, all of whom rose to distinction, the great-hearted, thoughtful student was a pillar of strength to his more mercurial wife. Strange that the unpretending home of two foreigners on a third floor in a Paris thoroughfare should have been so brilliant a centre for all that was intellectual. Men who were foremost in science, in literature, and in political life, were *habitués* of Madame Mohl’s *salon*, where they came in contact with men and women who had risen to fame as dramatists or artists. Rank and fortune were themselves in her estimation of no account ; only individual merit or personal distinction gave the *entrée* to her drawing-room, with the exception that to her own and her husband’s old friends, whether distinguished or not, warm welcome was always accorded.

In the one work we have from Madame Mohl’s pen —‘*Madame Récamier, with a Sketch of the History of Society in France*’—the words in which she describes the *salon* of Madame de Rambouillet exactly apply to her own : “She did not inquire into the pedigree of those whose society she preferred : wit and intellect ensured a perfect welcome. The most illustrious persons in every line met in her rooms, and each gained by contact with the others.” Again : “She had that independence of mind that led her to prefer merit and intellect to all other distinctions, added to great discrimination in finding them out.”

Mary Clarke was a child of three when taken with her





*Madame Mont.*

*from an original by  
W. W. Story*



elder sister by their widowed mother to France. With the exception of occasional visits to England, to Italy, and to Germany, her life was spent in France, and the purity of her French was wont to excite the admiration of those who spoke it as their mother tongue, and who were the best judges. She handled the language as she did everything else, in her own quaint original way. With her mother she lived in the world of letters, so that the *salon*, after her marriage with Mr Mohl, was only a continuation on an extended scale of the social evenings at the Abbaye-aux-Bois, where they lived for several years. It was there that Chateaubriand, Fauriel, and Ampère frequented their drawing-room, as also later when mother and daughter moved to the Rue du Bac, Madame Récamier being a constant guest. The vivacity of "*La jeune Anglaise*," as Mary Clarke was usually termed long after that she could lay no claim to youth, delighted them all. Her biographer remarks: "Chateaubriand said of her, '*La jeune Anglaise* is like none else in the world.'" Her sayings were so audacious, so trenchant, and so witty. Where she entered dulness and *ennui* fled. Her father's family was said to be of Irish extraction; her mother's was Scottish; and she might have been defined as a mixture of Scottish sagacity with a superabundance of Irish vivacity.

My first introduction to Madame Mohl was early in November 1858, when on the way to Sicily with my uncle, Dr Hugh Falconer, the palæontologist. We stayed several days in Paris in order to pick up an Italian maid whom Madame Mohl had taken infinite trouble to find for us. M. Jules Mohl, his friend, was then absent from Paris, but Madame received us with the greatest kindness.

Calling on her directly after breakfast, we were shown into the outer drawing-room that communicated with the inner and larger by a glass door, which, on our names being announced, was instantly thrown open, and a brisk little lady tripped forward to welcome us. With the sprightliness and quick movements of a young girl, she must then have been nearly threescore and ten. I had heard so much about her that various pictures had been formed in my mind—all very different from the little lady before us. She was attired, not in dressing-gown and curl-papers, as when occasionally at other times we were received by her, but in a dress just clear of the ground, of bronze-coloured silk, with a tiny pattern made after a fashion of her own, a little open at the throat. Her gown was simple and suitable, but her head-dress took us both aback, and we could not refrain from smiling at it, and the eagerness of her welcome.

“Well, you’ve come at last. I began to think that you would never come!” was the exclamation; and while she expressed regret at “Mr Mohl’s” absence, we had time to note the small features, the saucy upturned nose, and the round bright eyes so suggestive of keen sagacity. But the eyes looked through a dishevelled maze of little curls, which were in layers one above another, and completely covered her forehead. She reminded me (as I once sent word to her biographer, Miss O’Meara, who was desirous of collecting materials for the *Memoirs*) of a little Skye terrier that had been out in a gale of wind.

Never shall I forget her childlike cry of delight when, after my uncle had told her of our detention at Abbeville so as to see M. Boucher de Perthes’ collection of palæolithic flint implements (a day memorable in their

history, since before that time their being of human workmanship had been discredited in France and in England), she made some observation upon his travelling suit. The rough outfit had been made specially for geological work, and was certainly out of the common. The coat contained so many pockets, outside and inside, as to be embarrassing and bewildering to the wearer!

"Why, you are made of pockets!" she exclaimed, when he had unbuttoned his coat and displayed the interior casing. She was evidently charmed with the coat and its wearer, and insisted on our going to dine with her on the following Friday; but having no suitable dress, I begged to be excused.

"I had to take as little luggage as possible, and have no evening-dress, Madame Mohl. I have only a high black dress, and could not appear in that. I know you will kindly excuse me."

"You will do very well in that, my dear. I take no refusal. And stay, I'll tell you what I'll do. I shall write and tell the friends I invite not to dress."

So it was agreed, and I was inconsiderate enough to allow her to take this trouble. Also, I was to go to the Rue du Bac next morning but one, so as to meet the Italian maid.

That second interview was very funny and also satisfactory, as it led to Carolina's immediate engagement; but it was not half so droll as a visit I made to Madame Mohl a few days later, when Carolina was with me. We found her in the ante-room, expressing her opinion of some badly done work to a Paris working upholsterer. The man stood like a statue and neither flinched nor winked, while the irate little lady shook her clenched fist close to his nose! I was astounded,

and with difficulty kept my countenance. But, alas ! the scene was too much for Carolina, who tried to screen herself behind me. A half-suppressed titter betrayed her, and Madame Mohl looking round, angrily caught sight of the girl in vain striving to stifle her laughter. Much time and trouble had been expended in finding a family who would undertake to leave the orphan Carolina in Rome, her birthplace, and I fear that Madame Mohl did not forgive this mirthful explosion.

The dinner-party preceding her Friday evening reception was limited to seven, Lady Augusta Bruce (afterwards the wife of Dean Stanley) being prevented by the illness of her mother. An intimate friend of Mr Mohl's took his place ; Lady William Russell and her two sons, Mr Odo Russell (afterwards Lord Ampt-hill) and his brother, then Mr Arthur Russell, made up the number. We sat at a round table, the conversation, in deference to the Paris *savant*, being in French. I was placed between the brothers Russell, and blundered on in very Scottish French, until with a quiet smile Mr Odo Russell suggested, " Had we not better speak in English ? "

The dinner was served *à la Russe*, a fashion which was at that date by no means usual in England ; and the dishes, which were few in number, were the best of their kind, such as only a French *chef* could send to table. It was a lively little party, and our hostess indulged in occasional witty and merry sallies. Lady William Russell had great conversational powers, and we were charmed with her. The ease with which she expressed herself in French, and her clear enunciation, were admirable. She was quite what Lord Houghton described her, a "*grande dame* to the tips of her fingers."

Across these four-and-thirty years even the little items of her dress come to one's remembrance—the dark stone-coloured silk, the cape of fine old lace on her shoulders, and the flashing of gems on her fingers.

One could not but see how our sprightly hostess effaced herself, and, like a skilful pilot, led the conversation into channels which were familiar to her guests, and where they unconsciously displayed their best powers. In her work on Madame Récamier we again come on an observation which exactly defines the writer:—

If she knew an anecdote *à propos* of something, she would call on any one else who knew it also to relate it, though no one related it better than herself. No one ever understood more thoroughly how to show off others to the best advantage: if she was able to fathom their minds, she would always endeavour to draw up what was valuable. This was one of her great charms; and as the spirits of the speaker were raised by his success, he became really more animated, and his ideas and words flowed on more rapidly.

When we adjourned to the inner drawing-room, the evening guests were beginning to arrive. The two rooms were spacious but not lofty, plainly yet most comfortably furnished with wall-divans, covered, as were the easiest of easy-chairs, which were of all sizes, with crimson woollen damask, the window-hangings being of the same material. There were few ornaments, little gilding, and no glare. A subdued light was thrown from green-shaded lamps in corners on account of "Mr Mohl's" eyes, and this softened light added to the pervading atmosphere of repose.

Amongst the first arrivals were Thackeray and his two young daughters, the latter in pretty light-blue dresses. As they were being announced, Madame Mohl

called out from the other end of the drawing-room, "My dears, didn't I tell you that you were not to dress!"

Thackeray was very animated, and talked as perhaps only Thackeray could talk. Like others, he came under the spell of Lady William Russell's fascination, and was at once monopolised by her. Gradually, however, a group gathered round them, and soon the author of 'Vanity Fair' found himself surrounded and discoursing to an admiring little audience.

Madame Mohl's *salon* that evening was as usual crowded, many of the guests bearing names familiar to us from hearsay. Among other celebrities we noted Elie de Beaumont, the geologist and Perpetual Secretary of the Institute; M. Milne-Edwards, the naturalist; M. de Quatrefages, the anthropologist; M. de St Hilaire, and a host of members of the Institute. There was no cumbersome preparation for the guests; the only refreshments were tea and cake on a table in a corner of the inner drawing-room, tea being poured out by the hostess herself. How often, in the hum and babel of talk, that high voice rang out shrilly and merrily, as she apostrophised some of her guests, tickling the ears of all who wanted to hear more and lose nothing! Our old note-book records: "No music, no cards, no games in the *salon*, only conversation; but the ease and grace of French manners struck us particularly."

We had to leave Paris before the return of M. Jules Mohl, his wife, with characteristic kindness, loading us, unsolicited, with letters of introduction to her friends in Italy. It was Madame Mohl's habit to pay an annual visit to her English friends, and, late in the summer of 1859, M. Mohl followed his wife to England.



In going through some old letters I find one addressed to his friend.

PARIS, 120 RUE DU BAC, 26th July 1859.

MY DEAR FALCONER,—I hope to be in London on the 8th of August, or a few days later. If I cannot finish some things in the time I calculate, will you be so kind as to solicit my admission to the Athenæum from that time for a month, if it can be done, and the number of foreigners who can be admitted allows of it? You know what a pleasure it is to me to enjoy the hospitality of the Club.

I have read a great deal since of your cave, your bone knives, and all these old-world remains, and am anxious to hear from you the sequel of the story. I talked to Elie de Beaumont about it, who is most obdurately incredulous.

But we will talk of this and many other matters in London.  
—Yours very sincerely,

J. MOHL.

The attachment that had long existed between Jules Mohl and Hugh Falconer was fostered by the frequent autumnal visits of the former to London; so at a season when society was scarce, and the visiting world “out of town,” the two friends saw much of each other at the Athenæum Club, where on consecutive days they dined and spent their evenings together. With his great erudition, Jules Mohl had the singleness and simplicity of a child, and a sense of humour that made his companionship delightful. To my uncle he more than once described the circumstances of his engagement to Miss Mary Clarke, and they were inconceivably comical. During Mrs Clarke’s life he had been for some twenty years a daily visitor, and spent nearly every evening with mother and daughter for that daughter’s sake; yet on the death of the former it did not occur to our philosopher that a certain step was necessary to ensure to him a continuance of that daily companionship which was essential to his happiness. He was obtuse, and it

fell to the lady, who was ten years his senior, she being fifty-seven and he forty-seven, to point out that if they were to continue to spend their evenings together, the *convenances* must be observed. His simple rejoinder was staggering, "*Quoi faire?*" Was there ever a finer comedy! The celebration of their marriage was at the time kept a profound secret, and only the two witnesses were present—Jules Mohl inviting a friend on the previous evening to come to him next day and act as *témoin*. The friend was punctual, but went under the impression that he was to serve as witness at a duel! We read that "the ceremony was performed in the presence of the *témoins*, and the newly married couple parted at the church door, and returned to their respective homes. Two days later they met again at a restaurant near the railway station, dined there with their witnesses, and set off on a wedding tour to Switzerland."

After an interval of several years, and in the spring of 1867, I again saw Madame Mohl. Being then with my sister for several weeks in Paris, we received the old affectionate welcome, and went frequently to her Friday receptions. It was then for the first time that we made acquaintance with "the husband of Madame Mohl," and our great pleasure was to have a seat by his side during the evenings, which he made most interesting by pointing out the celebrities, and telling us the names of the guests. He always joined us sisters, and kept by us during the evening, for the dear sake, we believe, of his friend, who, alas! was no more with us, and from whom he was not to be very long separated.

On one Friday the *salon* was unusually crowded. Ladies in full toilet edged into a company where there was little space for display, and, after showing them-

selves, made room for others, and withdrew to later parties, where fashions and dress would be more appreciated. But there was always a happy mixture of dress and undress at Madame Mohl's. On that particular evening we happened to be near enough to Lord Houghton to hear him say on entering that he had only arrived an hour before from England, and the remembrance of this trifling circumstance was curiously verified the other day, when in reading Lord Houghton's 'Life' we came upon the following passage under the date 1867: "I left London two inches deep in snow, and found here the warmth of spring. The change was quite comical. I went to Madame Mohl's in the evening, and found myself talking to Renan, &c., as if I had been in Paris a month. *Comme la vie est facile ici!*"

Renan's appearance was striking. It may be prejudice, but I was always unpleasantly impressed by him. He was stout, broad, and short-necked; his large projecting eyes were placed far apart, and with the wide mouth were the reverse of attractive. Yet his face was undoubtedly massive and expressive of power, and we were often assured that the charm of his speech at once dispelled the impression made by his unprepossessing appearance. Madame de Witt, the daughter of Guizot, was a frequent guest, as were the Tourguenieffs, &c.; but on the evening in question the individual who interested us most after Renan was the young widowed Duchess Colonna, who had achieved great success as a sculptress. In a low dress of black velvet, which threw her snowy shoulders into strong contrast, her swan-like neck without any ornament, and her profusion of fair hair in masses of short curls, she was the ideal of elegance. What a little court she held, and how graceful were her movements!

Political opinions were so openly expressed and so adverse to the Imperial *régime* at Madame Mohl's, that I often wondered that the Government did not interfere and order the doors of the *salon* to be closed. She carried her dislike to the Emperor Louis Napoleon, whom she always spoke of as "*Celui-ci*," to such a pitch, that she persisted when travelling to use her old Louis Philippe passport under her maiden name of Mary Clarke. On this head I cannot resist quoting an anecdote recorded in her 'Life':—

One Friday evening, at the Rue du Bac, M. Guizot came in, and related the following story that he had just heard :—

"A relation of the Duchess de la R—— had married one of those '*suppôts de Satan*' (her term for any one in Imperial employ), and had further degraded herself by living under the roof with *Celui-ci*. The unhappy lady had become from that time forth naturally as one dead to her kith and kin in the noble faubourg; but she was now ill, dying it was believed, and it was a fit occasion for the exercise of mercy. The family therefore resolved to send her to judgment absolved, at least by the Faubourg St Germain. The Duchess herself generously volunteered to take this message of pardon to her dying relative. She ordered her carriage, and said to the footman, 'Aux Tuileries!' The man stared, but carried the order to the coachman; whereupon that venerable functionary, who had driven three generations of the de la R——s, got down from his seat, and presenting himself at the carriage-window, said, 'Madame la Duchesse, I cannot have the honour of conducting your grace to the Tuileries; my horses do not know the way there.'"

Madame Mohl clapped her hands in delight, exclaiming, "And the Duchess kissed the old coachman?"

"No," said M. Guizot; "but she got out of her carriage and sent for a cab."

Madame Mohl lived on this story for a week, and so did her friends.

More than once her opinion is recorded of conversation as it is generally practised in England :—

We are scarcely aware in England how seldom we practise that form of talk which alone can be called conversation, in which what we really think is brought out, and which flows the quicker from the pleasure of seeing it excite thoughts in others—conversation to which both reason and fancy pay their tribute. . . . Conversation is the mingling of mind with mind, and is the most complete exercise of the social faculty; but the general barter of commonplaces we choose to call conversation is as far removed from its reality as the signs of Caspar Hauser were from the talking of ordinary men.

Her definition of *de l'esprit* was that "it does not mean great wit, it is rather that quick perception which seizes the ideas of others and returns change for them."

As a specimen of Madame Mohl's style in English, which was said not to equal her writing in French, we give one more quotation from 'Madame Récamier, and the History of Society in France.' In the latter part of this work she traces the influence of the old ballads and Provençal traditions on chivalry in the eleventh century:—

That these stories originated in real facts belonging to these localities which the border ballads first commemorated, and by degrees altered, can scarcely be doubted. . . . We find to this day the Brèche de Roland made by the sword Durandal when the hero was dying; the story was recorded in one of the old ballads, and this trace remains of it. It is equally impossible to doubt, from the quantity of Provençal romances founded on Charlemagne's passage into Spain, that these traditions delighted both poets and people long before chivalry was thought of; but when the Provençal poets and chivalry did appear, this became their heroic age; they looked back upon it as the Greeks must have looked upon the days of Orpheus and Theseus. Nor was their reverence for it such a mere matter of fancy as might at first sight appear; for out of these mysterious thickets of history a spirit came forth just as spontaneous and fresh as a spring sparkling out of the ground in some deep glen, and like the same little rill after murmuring

a long time in dark solitary woods, it emerged into sight, became broader and deeper, and poured down like a river, bringing to us the majestic civilisation that overspread the country. How many curious and active spirits have endeavoured to trace a river to its source! but can any stream, however beneficent, be compared to the poetry which was the source of our modern civilisation, whose infancy was concealed in these unknown regions of history? It cannot relate its own birth, nor how it was nourished; but when this young muse, all charming with unconsciousness, began to speak, it was in a new tongue, so soft, so full of tenderness and grace, and the sentiments she expressed in this musical Provençal were so refined and enchanting, that all around were enthralled.

As Miss Mary Clarke, she was the literary executor of M. Fauriel, the author of the '*Histoire de la Poésie Provençale*,' &c.; and with fidelity and care she fulfilled the trust—Jules Mohl, who was also Fauriel's friend, generously aiding her in what was a labour of love.

Our last interview with her was early in 1870, when, being in Paris for a day or two with my husband on our way to Italy, we went to the Rue du Bac and made an early call. Madame Mohl received us in the traditional dressing-gown and curl-papers, the latter of very varied and brilliant hues, being red, green, and blue circulars utilised for this purpose. I imagined that she would make a little apology to my husband for appearing in this costume, as he was a complete stranger to her; but she made no allusion to this, and was quite unconscious of there being anything remarkable in her appearance, she getting as usual to the kernel of the subjects discussed. Her attractive niece, Miss Mohl, who afterwards became Madame Helmholtz, was with her, busily engaged with her painting. The use of the circulars as curl-papers was one of the small

economies which amused her friends, who knew of her frequent deeds of generosity and benevolence. For example, we read of Madame Mohl running about Paris one morning to induce buyers to go to the forced sale of a poor old friend's furniture, she attending herself and expending nearly 2000 francs in buying out what would be most useful, and presenting the same to the poor widow.

Would that we had preserved the quaint little notes that at long intervals were received from her! One only I can find—undated as usual—written from the Deanery of Westminster in June 1871. It was in reply to an invitation. She was unable to accept it definitely, and said: "If not, I shall certainly go some morning to see you." But we were on the point of leaving London, and saw her face no more.

More touching than her own deathbed, as recorded by the biographer, was that of Jules Mohl, whose death took place several years before that of his wife. When power of speech was lost to the dying man, and while struggling for breath, his hand was put out to stroke her poor face—a mute expression of consciousness that she was by his side.

To her his death was desolation. Faithful friends rallied round her and kept by her to the last, but the aged woman was often found by them in floods of tears, and her only pleasure was in talking of "Mr Mohl," and in bringing out editions of his translations from Persian and Chinese and other works. Her own summons came when she had attained the age of ninety-two.

She used her gifts in brightening the lives of others, and the memory of Mary Mohl will be cherished in many hearts—as it is in ours.

## OUR WHITE DEAL BOX, AND THE TROUBLE IT GAVE ;

OR, HOW THE CUSTOM-HOUSE AT NAPLES DEALT WITH  
SOME CASTS OF FOSSIL ANIMALS.

NEARLY thirty years have passed since before daybreak on a cold morning in December our steamboat from Genoa entered the Bay of Naples. I was roused by the stewardess, who brought me a message to say that Vesuvius was in sight, and I hurried on deck for my first glimpse of that strange and wonderful display—an active volcano. No gleam of dawn disclosed to us the features of the city and its unrivalled bay, but in the intense darkness two red-hot fissures, scoring the sides of the mountain, glowed with weird and wonderful effect, telling us in language more forcible than words of the furnaces that burned beneath, and reminding us that somehow we were on the near confines of the unknown underground world. The only coast-line visible was that defined by the bright bead-like line of Naples lights, contrasting oddly in their neat order and puny dimensions with the resistless power so unpleasantly near to them. No one, however, cared to study the line of harbour lights ; all eyes were turned to Vesuvius, and while we watched for the dawn it stole upon us unawares, and we knew of the approach of day by the dark form of the mountain looming before us in the dim twilight, its crater cone standing high above



those red-hot rents in its sides. It was a scene never to be forgotten.

It may be different now, but landing from a vessel in the Bay of Naples thirty years ago [1858] was an uncomfortable experience. A fleet of small boats surrounded us, and we at once made acquaintance with that strong element in the popular life of Naples—noise. It was positively deafening: each boatman shouted louder than his neighbour for possession of the helpless passengers. A fight seemed imminent, yet there was no real anger, it was all noise, and only their ordinary mode of transacting business. By nine o'clock we passengers had been all peaceably apportioned and were landed at the custom-house, having been first rowed to the police-office in order to have our passports examined.

Our travelling party consisted of my uncle, a distinguished geologist (who had undertaken this journey to the south of Europe for the object of examining certain fossil animal remains); I, his niece, who acted as secretary; and Carolina Belloni, an Italian maid whom Madame Mohl had engaged and had ready for us as we passed through Paris. Our personal luggage made only a small boat's load, as we had insisted on Carolina's capacious chest (which, by the way, held all her worldly property) being warehoused at Genoa, and had replaced it by a box of modest dimensions. But the large item of our baggage, and the one destined to give us trouble, was a square deal case with the word "Fragile" painted thereon in very legible letters. We had nothing contraband, and a few francs speedily cleared our own effects as well as the box of books; but when it came to the question of the white deal box, the custom-house clerks, although assured that it contained no merchandise, declared in a body, and all

speaking at once, that it could not be surrendered. The package was mysterious, and no silver key was found capable of opening a way out of the customs for it. Not even a frank statement of its contents was of any avail—it made matters worse. Casts of the skulls of extinct animals were out of the common and beyond their comprehension, and we had reason to believe that they suspected us of introducing into Naples something of the nature of dangerous explosives.

The case contained only plaster casts of the head and bones of a rhinoceros, the gift of Professor Jourdan of Lyons to my uncle, who was taking them to Palermo for comparison with a brother rhinoceros skull in the museum there. The pitch of excitement roused by our enumeration of the specimens would have amused us greatly at any other time—it was comical to a degree; but time pressed, and it was very tantalising. Our Roman maid was aghast, and as for us too stolid Scots from the far North, it took away our breath. The more we urged, the more resolute the custom-house officers became, and it ended in our having to leave the case in their custody.

Next day being Christmas, and observed as a high holiday, we of course took no steps for the rescue of the case. And now comes the recollection of that Christmas morn, ushered in, as it was in true Neapolitan fashion, by the firing of guns in quick succession, by bursts of joyous music, and by the lively songs sung under our windows to the accompaniment of guitar or castanets. How perfectly southern it all felt!

Christmas Day over, we lost no time in seeking the advice of the British consul. He urged, nay, implored, us to do nothing, and to make no attempt for the recovery of the case; counselling us only to claim it on the

day of our sailing for Sicily, saying that if we took any action we might get into serious trouble. He further explained that it was even undesirable for him to move in the matter, as the Neapolitan Government had been alarmed, and with good reason, by several disquieting occurrences. He impressed on us that the country, politically, was in an anxious state; and, though he did not say so in words, it was evident (as events soon afterwards proved) that the Kingdom of the Two Sicilies was on the very verge of a revolution. Ferdinand II., notorious as "King Bomba," was still upon the throne. He now lay upon his deathbed, and his reign was within a few weeks of its close. But the fate of the prisoners of St Elmo, and of those still more hapless ones immured for life in the *piombi*, the underground leaden dungeons of Trapani—some on groundless suspicion—had stirred men's hearts to their depths, and underneath all the gaiety and music and noise of Naples there was a seething undercurrent which was soon to find vent. Before long the dynasty of King Bomba was to be relegated to the region of history.

Without a doubt our consul had given us the best advice, but my uncle was not satisfied. The specimens in the case were of more value to him than all our travelling gear put together; they had already caused delay—to wit, at Lyons, where we had waited while the casts were taken. And now our geologist, unprepared for snow and bitter winds at Naples, fell ill. While sick and ill he could think of nothing but his forfeited specimens, and fretted to that degree about their supposed loss, that I was impelled to do my utmost, and attempt their extrication from the custom-house.

My first two journeys there, with Carolina as spokeswoman, were productive in promise, but barren in

results. The employees in it were said to be men of family and favourites of King Bomba, the office being a lucrative one. We left it on each occasion on the understanding that the case would be delivered to its owner next day by a commissionaire at the hotel. But as several days passed and no case appeared, it was necessary for the invalid's peace of mind that one more attempt should be made.

In the mean time our little party had been reinforced by the addition of my uncle's old friend Mr G—t; so with him as escort, and taking Carolina as spokeswoman, I again at the office of the custom-house made application for the delivery of the case. It was the same office where it had been originally seized, and where, on my previous visits, I had been shown a huge book, in which a detailed description had been inserted—a ceremony here again repeated. The officials who crowded round us all spoke at once, so that each voice in its vehemence drowned its neighbour's, and we understood not one word. I knew little French and less Italian, while our friend spoke neither.

At length, seeing our perplexity, one of the clerks signed to us to follow him to the warehouse, where we found it difficult to thread our way through the closely piled barrels and casks. For me it was especially difficult. It was in the days of crinoline, and Carolina had insisted on my being clothed in a garment which she had bunched out in a marvellous manner. We, however, pushed through to the farther end of this, the large magazine, where there was a circular glass counting-house, lined with desks, behind which sat the upper officials of the customs. Near to it was a raised seat, like a precentor's desk, occupied by a grey-haired veteran, who was apparently posted there to overlook the

clerks in the glass counting-house. He was politeness itself, and insisted on dismounting, so that I might take his place. My sensations on being perched up before his desk I cannot describe. A lady in the warehouse of the customs was an unwonted sight, and the clerks of the glass room let their work stand still, and did not scruple to rise in a body and stand and stare steadily at the solitary young Scotchwoman. At the request of the veteran, and to keep me in countenance, our friend climbed up beside me, when, in spite of the opera-glasses directed at us, I was able to join him in a hearty laugh at our strange elevation.

Meanwhile a young red-haired clerk, who seemed speechless and frantic with excitement, flew away to one of the offices for a document relating to or descriptive of our case which stood, I could see, not far from the elevated desk. There were several deal cases not unlike it, but I singled it out at a distance, although the familiar handwriting of the label was upside down. And now followed the trying hour. We grew fidgety, for time passed, though the clerks had not become tired of staring, and no document was forthcoming. Carolina, disapproving strongly of the whole proceeding, and disgusted with the position, had sheltered herself behind some casks of sugar.

Then it was that the kind veteran came forward and tried to cheer us, reiterating, "Only two minutes more to wait! only two more!" and then he pointed to a book on his desk, which he explained was "Scozzese." On opening it I found to my surprise a Naples edition in Italian of " 'Rob Roy' per Walter Scott." I said to him, "Sono Scozzese," and the old man crowed, clapped his hands, laughed hysterically, everything but danced.

At length the excited clerk appeared in hot haste with a long mysterious paper relating to our box, and to which was appended a number of signatures. He carried it to one gentleman in the glass counting-room, but he, instead of adding his name there, came forth with dignity, his cloak wrapped round him, and signed on the high desk before us, a proceeding which was quite unnecessary. Here a timely admonition from our friend reminded me of the necessity of looking very grave, as this last incident had led me for the moment to look on the comical side of our troublesome situation and indulge in a nervous laugh.

At this juncture the signal was given to us by the kindly veteran to dismount and run after the red-haired clerk with the long document. How we squeezed through among the dusty chests! How I got out from between a cask and some greasy machine was to me a matter of astonishment.

Arrived at the end of what was supposed to be a passage amongst the goods, we reached a door, through which our messenger passed, beckoning us to follow. Through three offices, more or less filled with clerks, we hurried after our guide until we reached the inner room, where we found ourselves in the presence of the Direttore Generale. He sat before a table strewn with papers, and, pointing to chairs, asked us to be seated. Our friend took a chair on his side of the room, while I sank down on a sofa on mine. The red-haired clerk rushed out of the room—in and out again, always flourishing the paper; and several Neapolitan gentlemen crouched in with heads uncovered and in an attitude of profound deference; but the Direttore curtly ordered them off one by one without a hearing. Then began our cross-examination.

When did we arrive? How long were we going to stay? Where were we going to? To Sicily? To Rome afterwards? How long should we remain in Rome? And how long in Sicily? Again laying stress upon Rome, he demanded at what date we meant to arrive there? To these and other questions I meekly replied. Finally he remarked that we had been a long time in Naples, since the 24th ult.? To which I answered that we had been detained nearly three weeks by my uncle's illness, which illness had prevented him from applying personally for his case of fossils.

While answering this string of questions in the worst possible French, I was conscious that our friend's anxiety gave him the uneasy air of a culprit, and that Carolina's unspoken indignation was more likely to rouse than to dispel suspicion. The Direttore pondered gravely on the evidence, and I tried to read his thoughts, but in vain! It was impossible to get any ray of light from that impassive countenance! To our relief the clerk now returned with a fresh document, which was signed by the chief, who, without a word as to his intentions, directed us to follow our guide to witness the opening of the box.

Out we passed again through all these offices with their staring clerks, then were led to the left, across a horrible back-court, into a large wareroom with counters and weighing-machines. One man used a switch to keep my dress clear of the barrels! A curious group stood round while our case was opened. The lid removed, it was carried with great gravity to the largest counter, the straw and pamphlets were taken out, and then the fossils, with many suspicious glances directed to them. The novel character of the goods seemed to work like a charm in quieting our guide, who, after

tapping one of the jaws all over with his fingers with a puzzled look, held it out to me asking what it meant. I had begun to hope that now the trial was at an end, and that we had only to gather up the specimens and shake off the dust of the custom-house from our feet; but no. To one was given the rhinoceros skull, and he was the functionary most to be felt for, since, in mortal dread of an explosion, he held it at arm's length. Another carried the jaws; a third the teeth and other fragments, while our guide took the pamphlets, and a procession was formed, he of the rhinoceros skull leading the van, and I bringing up the rear. Anywhere, I thought, but surely not back through all these rooms. But back we marched through the line of offices, every eye upon us, every pen idle at our approach.

Instead of the small inner room, we found the Direttore seated in a large chamber at the end of a long table, with about fourteen officials standing round it. A strange and profound silence prevailed. The fossils, with the pamphlets, were all laid upon the table, and suspicious looks and many parleyings passed between the members of that perplexed company.

After much discussion and what seemed a long pause, the Direttore Generale ventured to touch the skull; his example inspired the others with courage, and one braver than his fellows lifted a jaw. Curiosity getting the better of the great Direttore, he called for La Signora, and for the moment forgot but that he was of the same terrestrial race as those around. I stepped forward to his end of the table, realising that all the Italian I could muster had to be ready for the emergency; he, however, addressed me in French.

"Qu'est que c'est?" pointing to the skull.

"Une tête, monsieur," was my humble reply.



“Une tête de quoi?”

“D’un animal,” suggested one of the bystanders.

“D’un rhinoceros,” I added; but the words were scarcely uttered when the spirit of mischief uprose within me, and whispered, Why not have called it crocodile?

One of the company still holding the jaw which he had selected, the Direttore again appealed to me for a further definition. I was well posted up in the description of the specimens, and could have told him that it was a *mâchoire inférieure* containing so many teeth. But scared by fifteen pairs of eyes, the spirit of mischief fled and cowardly nervousness took its place. Pointing to the rhinoceros, I gasped out “Dentri!” (intended for the Italian *denti*); the Direttore bowed as if he knew all about it, yet no ray of intelligence lighted up the features of his officials. The instant consciousness, however, that I had made a great blunder was itself of use to me. It overcame my nervousness, and realising that now was the time for action, I made what I intended to be a pathetic appeal to the Direttore in French, framed quite regardless of grammar. It, however, served its purpose.

“Rien que de moules, monsieur! rien que de plâtre! Seulement fossiles!” I repeated over and over without receiving an answer. In an undertone he consulted with his staff, and hesitation dwelt on his face, while his eyes travelled backwards and forwards from the specimens to myself. After a series of whispered consultations he appeared no nearer a decision than at first. But by degrees, and after what seemed an age, the cloud dispelled, he spoke volubly aside, the fossils were gathered together, and I, who had breathlessly watched this pantomime, felt assured of their safety.

But stay ! the ordeal was not yet over. The books, or rather pamphlets, were now put before the Direttore, and, although doubtful as to their fate, my spirits rose with the assured safety of the fossils.

“Rien que descriptions des fossiles ! Lisez, regardez bien, monsieur, je vous prie !” I urged, and at the same time making a movement to receive them from him. But I miscalculated his intentions. Placing his fingers on the cabalistic letters F.R.S. inscribed after the owner’s name on several of the outside leaves of the pamphlets, he exclaimed—

“Non ! il faut une commission exprès de prêtres pour les examiner.”

I must have looked very indignant, for a second idea seemed to strike him ; and, a more generous impulse warming his cold frame, he selected ten of the larger memoirs for the priests’ report, and said I might take possession of the others. I could make no remonstrance, although those that he had reserved for clerical examination were the very ones descriptive of the fossils, and therefore the most necessary for my uncle to have restored.

Then, taking up a separate package of pamphlets which had been given to us by a professor at Montpellier for the late Professor Phillips of Oxford, he again detected the unlucky letters F.R.S., and demanded their exact meaning. Royal Society sounded well, but how was the word Fellow to be rendered in French or Italian ? I had to be careful, since it could be interpreted in more than one sense. A little heedlessness on my part might bring on my uncle the same sentence as was passed in another Italian town on a Cambridge don who had “Senior Wrangler” inscribed on his passport. The police translated the words as “inveterate

brawler"! (*Rissatore inveterato dell' Università di Cantabrigia*), and he was in consequence denied permission to travel, and was detained eight days before being allowed to proceed!

I explained to the Direttore that F.R.S. was a title of distinction, signifying membership of a society into which men were elected who had achieved original work in science. One could see that the word science was distasteful.

After a close inspection of the memoirs, and after studying the title-pages of several, all at once a brilliant idea came to him.

"C'est d'histoire naturelle!" he exclaimed.

"Oui, monsieur, ils sont tous de l'histoire naturelle."

One hand still grasped the ten largest copies, but with the other he gave me the small ones, adding that, as the next day was Sunday, and Monday a *festa*, the priests could not assemble until Tuesday. We bowed acquiescence—what else could be done? And, too thankful to be released, our procession once more reformed, and we again traversed the line of rooms, through the court on into the goods warehouse.

After the fossils had all been weighed and re-packed, the red-haired clerk darted off with the long paper, then reappeared, and conducted us to a densely crowded room where the men were being paid their Saturday wages. Here the smell of grease was so overpowering that I was glad to get to an open door and stand outside, waiting for the formal surrender of the box. Finally, our messenger—in whose charge we had doubtless been placed—came to tell us that we were only to be charged duty for the casts of fossils under the head of works of art, and that this duty amounted to one piastre. We had been prepared to pay heavily for

the ransom of the box, yet, unreasonable mortals as we are, we now felt actual disappointment that the fossil casts which had involved us in such an expenditure of time and of patience were not rated at a higher figure than one piastre! Away he ran with the money, and back again; then on to another office, finally whirling us after him to our white deal case, of which we were now again in actual possession, minus the ten thick memoirs. Although in a state of exhaustion from his exertions on our behalf, our guide nevertheless escorted us and our fossils to the exit, and witnessed our triumphal departure after that long and anxious day in the custom-house of Naples.

Yet a few more words for the sequel. Not on Tuesday, but on an early day after, my uncle was able to venture out, when I once more found myself at the custom-house. I had no desire to enter it again; therefore, while he applied at the office for restoration of his pamphlets, I remained in the carriage, and, to pass the time, looked over some pages of 'Murray.' After a while my uncle and Carolina returned, both shaking with laughter, and saying that the officials had insisted on seeing *la donna delle ossa*, and that the pamphlets were only for her. They had, in short, refused to give my uncle his own property! While waiting, I had observed from time to time that little relays of officials had peered out to inspect the carriage and its occupant, to make certain that she was really *la donna delle ossa*! Presently our friendly red-haired messenger came out, and, with a profound bow and a flourish, counted over the ten memoirs, and handed them to me—not to my uncle, who lay back in the carriage convulsed with laughter.

The very remembrance of this curious adventure stirs one, even at this far-distant date, to laughter. Some of the scenes were so inexpressibly comic! Yet, alas!—

“Our sincerest laughter  
With some pain is fraught.”

Behind the laughter there are tears. For the geologist, on whose every word we hung, has long since joined the majority.

## AN EVENING WITH MRS SOMERVILLE.

As each successive year inevitably narrows the once wide circle of friends who had the privilege of being received by Mrs Somerville in her own home, it may be well to jot down one's recollections of an evening spent in her society more than three-and-thirty years ago.

When passing through Florence in the spring of 1859, Mrs Somerville's card was left at our hotel, with the invitation pencilled in her well-known handwriting, "Will you all come to drink tea with us to-morrow evening? Do not trouble to make a toilette." We were a party of four—two uncles with two nieces, one of the former being Dr Hugh Falconer, the distinguished naturalist, who was an old friend of Mrs Somerville's: our other uncle had recently returned from Australia, where he had spent his life, and, like his nieces, was not scientific.

Doubtless, but for our naturalist's personal introduction, we three others would have felt no little trepidation in presenting ourselves at her house in the Via del Mandorlo, and seeking acquaintance with the authoress of 'The Connection of the Physical Sciences,' a work which had reached nine editions in this country, besides those in America and foreign translations. We should hardly have had courage to meet this formidable lady, of whom Laplace had said that only two women in the world could understand

his 'Mécanique Céleste,' one being Mrs Greig and the other Mrs Somerville (who were one and the same individual, as, several years after the death of Mr Greig, she became the wife of Dr William Somerville, her cousin). Nevertheless we were all eager to meet our illustrious countrywoman, and were conscious that this opportunity was never likely to recur.

When ushered into the modest drawing-room, it was to find that other guests there were none, and that we had the privilege of being received into the little family circle, which consisted of Dr and Mrs Somerville, and their two unmarried daughters, Martha and Mary. It felt as if the palaces and pictures of Florence had all vanished like a dream, and that we had been transported back into our own country, into a happy English home.

Our hostess came forward, and in her simple natural manner gave us all a cordial welcome. Instead of a formidable woman who looked us up and down and made one feel the distance at which we were from her, here was a refined, gentle-looking, elderly lady, below the middle height, eager to set us at our ease, her slight graceful figure clad in a plain dress of the soft black silk of the country, her cap of fine old lace brightened by light lavender ribbons. So far from looking "strong-minded," I at the first glance set her down in my own mind as dainty, the simplicity and fitness of her dress and surroundings were all so harmonious. At a second glance, however, it was to realise that we were in the presence of an uncommon woman. There was no mock humility, no false modesty, but there was the stamp of dignity on her features, and, if I might use a long word, a self-containedness that could not fail to impress those who

came in contact with her. The light brown hair was only streaked with grey, the smooth forehead showed few wrinkles, and no matter what the subject of conversation was, the shining, penetrating grey eyes were turned full upon the speaker with rapt attention. Withal, there was a sprightliness, a mental freshness, rare to find in man or woman. The bust by Chantrey, which stands in the library of the Royal Society at Burlington House, is an admirable likeness of Mrs Somerville, but it reproduces the grave scientific mood, and misses, as marble invariably must, the vivacity which was the charm of the countenance in life. Nor could it give the delicate complexion for which in her girlhood Mary Fairfax was noted, which won her the title of "The Rose of Jedwood," and traces of which she still retained. It is, however, altogether misleading to describe her as elderly, as at the date of our visit she must have been seventy-eight years of age.

Dr Somerville, looking much older than his wife, was evidently feeble, and during the evening kept in his comfortable arm-chair by the fire. He was more a listener than a talker, and well content to hear the soft-toned voice of his wife: he followed her every movement with loving eyes. The Miss Somervilles—middle-aged, and fair-haired like their father—were especially pleasant and kind, exerting themselves in every possible way to entertain us.

Conversation did not languish. Our uncle, Dr Falconer, was soon giving Mrs Somerville a graphic account of his discoveries in Sicilian caves during the winter, and it was a sight to see the quiet eager interest with which she listened to this recital of his finding flint implements made by human hands in







association with remains of extinct animals in the Cave of Maccagnone, and to hear her trenchant questions as to what date they could be referred. His racy descriptions in recounting his experiences at the Cave of San Ciro, near Palermo, amused us all much. The field in front of it was strewn with fossil hippopotamus teeth, and well we remember the shouts of delight with which the peasant mothers and children welcomed us on our daily visits to the cave. On one occasion we counted a crowd of forty-two women and children, and it was comical to see infants, with outstretched arms, their tiny fingers clasping a molar of hippopotamus. The mothers thought themselves liberally rewarded with a few quattrini, the smallest imaginable copper coins. The merriment with which he related these Sicilian anecdotes was infectious.

Yet while he talked, and we all enjoyed the recital, we had not forgotten to look round the room again and again for one object which was missing. This was Mrs Somerville's serviceable work-basket: although the profound mathematician, she was an expert needlewoman, and our uncle told us that on a previous occasion, when calling upon her, he found the authoress of 'The Connection of the Physical Sciences' busily engaged in darning, with the homely basket of family stockings before her. We can understand how well and how carefully that darning would be done. She loved needlework, and excelled in it; her daughters possessed beautiful specimens of her embroidery and lace-work, and we are told that at ninety she could count the threads of a fine canvas without spectacles.

Perhaps the chief feature of that evening was Mrs Somerville's interchange of talk with our non-scientific

uncle, who had led a lonely life in Australia. Our hostess had many questions to ask about the Colonies—questions that were prompted by real and not by any forced interest. She elicited much about the aborigines, the climate, the coral reefs, the sudden growth of cities, and the life in the Bush. He had telling anecdotes of an out-of-the-way experience, and a fund of information about regions then imperfectly known. In short, he was completely fascinated. Wherein was her power of attraction? Was it that she was so gentle and genuine, and threw herself with such interest into the subject? We believe that in this case it was partly the charm of her strong Scottish accent, which fell like music on the ears of a countryman who had been so long an exile. Mary Somerville was the ideal Scottish gentlewoman.

We learned from Miss Martha Somerville, who afterwards edited the 'Personal Recollections,' that then her mother's scientific writing was all done in bed in the morning hours, from nine to one, before she got up; her afternoons were often occupied with light literature, or with drawing and sketching in water-colours, in which she took unfailing pleasure; and in the evening her house was open to friends.

When conversation became general and turned on modern English and American books, we were surprised to find that the woman who wrote upon abstract science knew more of the best current literature and about poetry than any of us. She had read the latest books, and in science was posted up in all the questions of the day. I shall not forget how, with that quaint Scottish accent and in that remarkably soft voice, she expressed her opinion that scenery and landscapes in England were as beautiful as those of

Italy, but that the absence of sunlight made the great difference between them.

Her daughters said it was almost incredible what their mother contrived to do in each day. No doubt the early education of her Scottish home stood her in good stead, and begot tastes and habits which were a refreshment to her in after-life, especially when grappling with some abstruse problem. For instance, if she found herself tired, and her attention difficult to keep fixed, she put aside mathematical work and took up her embroidery, or a novel, or some other occupation for a time, and then returned to her problem fresh and with vigour. She was a very good housewife and a thrifty one, and an "excellent judge of a well-dressed *déjeuner*," and, as a girl, with her own hands prepared the creams and jellies for her mother's little supper parties. Then the household linen (of home-grown flax spun by the maids) was not only mended and made by the young Mary, but her own dresses, even ball dresses for dances in Edinburgh, were her own handiwork. We read of her going to a pastrycook's daily, there to take lessons which were turned to account in after-life. She was an excellent cook, and the gift in later years of a large quantity of orange marmalade of her own making to Sir Edward Parry's third Arctic expedition is quite characteristic. Her practical education was so many-sided that it is difficult to say what she did not learn.

Yet in the midst of cooking and dancing lessons and painting lessons, besides practising four or five hours daily on the piano, for she was passionately fond of music, we find that the girl's thirst for knowledge was unsatisfied. In order to fill up odd moments of time, she taught herself a certain amount of Latin, and sub-

sequently learned enough Greek to read Xenophon and part of Herodotus.

It was in groping after knowledge that the young Mary's curiosity was awakened by seeing on a page of a magazine of fashions strange-looking lines mixed with letters—"chiefly  $x$ 's and  $y$ 's," and was told in answer to her inquiry that this was algebra. Hence the beginning of the work of her life. The history of the manner in which with very little help she acquired this algebra and learned mathematics, and of the difficulties she had to encounter in educating herself, constitute a striking chapter of her noble life. Much of her education was unaided and worked out alone. For instance, we read, "Mary was so busy before she began Euclid that it is not astonishing that she found a little difficulty in making the new study 'fit in' with all her other work." Already she rose early that she might find time for practising music: now she found it necessary to sit up late for algebra. This habit was eventually put a stop to, not because it was too much for the girl, but because of the consumption of too many candles. "The servants complained that it was no wonder the stock of candles was soon exhausted, for Miss Mary sat up reading till a late hour." So orders were given that Miss Mary's candle should be taken away as soon as she was in bed.

Doubtless that patient protracted struggle in order to obtain books or instruction, likewise the ridicule to which she was exposed by those who jeered at those "foolish studies," helped to make her the eager champion throughout life for the removal of the disabilities of women, and for opening up a literary or a scientific career for those among them who desired it. And does not her practical usefulness disprove the assertion that

higher education unfits women for home duties? With Mary Somerville her home duties came first,—nothing was ever allowed to interfere with those.

When one ponders on her career, it is hard to say what stage of it one most admires. Is it childhood, when the little Mary would have nothing to do with dolls or toys like other children, but had an enthusiastic affection for birds and animals and all living things, and wandered about the sea-shore and on the links at Burntisland, gathering shells and wild-flowers, and making collections of sea-birds' eggs? The little maiden was kept busy as a bee, shelling peas and beans, picking currants, feeding the fowls and looking after the dairy, her father instructing her how to lay carnations and distinguish between leaf- and fruit-buds in pruning trees.

But is not her girlhood of greater significance, when in the midst of all her home avocations—all the cookery, the stitching of fine linen shirts, the making and mending, the painting and practising on the piano (she had learnt how to mend the broken strings and tune it)—the young girl found time to pass hours at the window of her bedroom studying the stars by the aid of the celestial globe? We are told that many midnight hours were spent by her seated at this window, watching the planets and marvelling at their movements. Was it not too in her girlhood that by chance she stumbled on the key which was afterwards to unlock for her a knowledge of the great laws that govern the universe, and in her eagerness to learn the use of this key, it was then that Mary Fairfax rose at daybreak, and, seated dressed upon her bed, studied Euclid for hours before breakfast, with a blanket wrapped round her for the bitter cold?

It is not, however, as the mature woman who had achieved a world-wide fame that she most attracts us? Maria Edgeworth aptly described her in saying, "Her head is among the stars, while her feet are firm upon the earth." One can picture her then conducting the education of her two little daughters, "teaching them as much as I am capable of teaching them," while passing difficult works through the press, and never impatient except when they were inattentive. A pet sparrow was generally perched asleep upon her arm as she wrote.

But the glorious old age of which we had a glimpse was ennobled by the deeply religious feeling that had pervaded her whole life. That sight of Mary Somerville in her own home as the beloved wife and devoted mother made an impression that can never be effaced.

On turning over the leaves of her 'Personal Recollections' we find that she alludes to our evening visit in a letter to her son, the late Mr Woronzow Greig. It is dated Florence, May 29, 1859. After mentioning that she had bought quantities of old linen, and with her daughters spent the day in making bandages for the wounded soldiers fighting for the independence of Italy, she goes on to say: "We have had a visit from Dr Falconer, his two nieces, and brother. They had been spending the winter in Sicily, where he discovered rude implements formed by man, mixed with the bones of prehistoric animals, in a cave so hermetically shut up, that not a doubt is left of a race of men having lived at a period far anterior to that assigned as the origin of mankind. Similar discoveries have recently been made elsewhere. Dr Falconer had travelled much in the Himalayas, and lived two years on the great plain of Tibet: the account he gave me



of it was most interesting. His brother spent fifteen years<sup>1</sup> in Australia, so the conversation delighted me: I learnt so much that was new."

A cordial invitation was given to spend one more evening, but time pressed, and to our regret we were unable to return. Just before leaving Florence our naturalist had a note from Mrs Somerville to introduce an Italian gentleman who was desirous of acquiring information about the boracic acid works in Tuscany, which had brought large fortunes to those who had utilised the thermal springs. With her own ardent thirst for knowledge, she was ever eager to help forward other workers.

In another unpublished letter to the same relative, the writer records her keen interest in the great political events happening in Italy, and gives her impressions of Victor Emmanuel's entrance as king into the beautiful old city. Her sympathies had all along been on the side of a united Italy. The letter is a long one, so we shall only make one or two extracts. Its date is Florence, April 27, 1860, when Mary Somerville was in her eightieth year:—

DEAR DR FALCONER,—It has given me much pleasure to be so kindly remembered by your niece . . . and you. I hope the two ladies and you will be induced to return to Florence and make us a longer visit than you did last time. I regret you are not here just now to see the intense enthusiasm with which the Florentines of all ranks have received their adopted king. He is an excellent horseman, and the excitement was extreme when he, with his well-mounted and brilliant suite, rode through the decorated streets under a shower of flowers. The crowd was immense, between thirty and forty thousand had come from all quarters for the occasion, and no carriages

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<sup>1</sup> It was more than twenty-five years.

were allowed; but as we were invited by the Marchesa Lajatico to her balcony, I saw this singular and interesting historical event without fatigue, but Mr Somerville feared it would be too much for him, though he is remarkably well. I have gone to nothing else, as my daughters have many friends to take them wherever they may wish to go, but everything has been made gloomy by torrents of rain and cold. I never have seen so bad a season in Italy. I am now writing by a large fire. . . . Murray has sent me a copy of Mr Darwin's celebrated work: it certainly is the most profound investigation of an extremely difficult subject, and will no doubt give rise to much discussion. I am curious to see what they can say against it in the 'Review.' . . . We all unite in every kind wish to your niece . . . and you, and be assured that I am always most sincerely yours,

MARY SOMERVILLE.

Ten years later we had one more interview with Mary Somerville. Early in 1870 my husband and I being in Naples, and knowing that she had moved from Florence soon after Dr Somerville's death, we went to her flat in the Chiatamone, and were fortunate enough to see her. If less animated, she looked only a little older, but as her daughters were out it must have been an effort to sustain the conversation with my husband, who was a stranger, and known only to her by reputation. We were received with the old cordiality. Perhaps she had become more grave, still there was the same serenity, the same unquenchable thirst for knowledge, and the same trenchant questions. In alluding to the move to Naples, she did not add that it was chosen as a last home in which to end her days, yet I took it as implied, and the consequent sadness marred all my enjoyment of that last meeting. Her mental powers were keen and clear as ever, and Vesuvius and volcanoes were discussed, while I remained a quiet listener. Her room was flooded with sunshine,

the windows thrown open and admitting the view of the beautiful bay.

As the sun sank to rest that day in more than usual splendour, one could only think of Mary Somerville's glorious old age and its resemblance to a golden sunset. Her years far exceeded the ordinary span of human life, and we knew that we had looked upon that never-to-be-forgotten face and form for the last time.

Her last work on 'Molecular and Microscopic Science' was published in 1869, three years before her death. For a motto she chose as most appropriate, "*Deus magnus in magnis, maximus in minimis.*"

It is stated by Martha Somerville that her mother's rare powers shone with undimmed lustre to the end. Her last occupations, continued to the actual day of her death, were the revision and completion of a treatise which she had written years before on the 'Theory of Differences' (with diagrams exquisitely drawn), and the study of a book on 'Quaternions.' She cherished her talents as a great gift, and the use she made of them will serve as a stimulus and a beacon to less gifted sisters. The difficulties encountered in acquiring her mathematical knowledge seemed insurmountable, but she went on her way with quiet perseverance and overcame all opposition. Mary Somerville was eminently feminine, and had what such a woman as she would value as the highest reward—the spontaneous homage of hearts and the admiration of the thinking world.

As a specimen of her writing, we extract a sentence from the 'Preliminary Dissertation': "At a very small height above the surface of the earth the noise of the tempest ceases, and the thunder is heard no more in those boundless regions where the heavenly

bodies accomplish their periods in eternal and sublime silence."

Again, in the 'Recollections' this passage occurs: "So that the stability of the solar system is ensured for unlimited ages. *The perturbations are only the oscillations of that immense pendulum of eternity, which beats centuries as ours beats seconds.*" The italics are ours.

One more quotation:—

I am now in my 92nd year (1872), still able to drive out for several hours. I am extremely deaf, and my memory of ordinary events, and especially of the names of people, is failing, but not for mathematical and scientific subjects. I am still able to read books on the higher algebra for four or five hours in the morning, and even to solve the problems. Sometimes I find them difficult, but the old obstinacy remains, for if I do not succeed to-day I attack them again on the morrow. I also enjoy reading about all the new discoveries and theories in the scientific world, and on all branches of science. . . .

But we must curtail, and only give the last touching words:—

The Blue Peter has been long flying at my foremast; and now that I am in my ninety-second year, I must soon expect the signal for sailing. It is a solemn voyage, but it does not disturb my tranquillity. Deeply sensible of my utter unworthiness, and profoundly grateful for the innumerable blessings I have received, I trust in the infinite mercy of my Almighty Creator. I have every reason to be thankful that my intellect is still unimpaired, and although my strength is weakness, my daughters support my tottering steps, and, by incessant care and help, make the infirmities of age so light to me that I am perfectly happy.

The old age of Mary Somerville stands almost alone, so far as we know, and if we consider her sex, without a parallel.

## IN MANTUA DURING THE AUSTRO- ITALIAN WAR.

AMONG out-of-the-way incidents of travel in Italy, the most remarkable in our experience was a visit paid [in 1861] to Mantua, the great fortress of the Quadrilateral, while it was in Austrian occupation, and during the Austro-Italian war. Probably few women can testify to having spent two nights within the walls of the fortress under such conditions, therefore we are tempted to jot down our recollections. Across the dim years those recollections stand out clear and distinct, as if they mirrored the events of yesterday.

A six weeks' truce had not come to an end, and there were consequently no active hostilities, still on looking back we are inclined to think that the expedition was more venturesome than prudent, if not altogether foolhardy. Our uncle, Dr Falconer, considered it practicable; we had implicit confidence in his judgment, and when he expressed a wish to see the two great Austrian military centres, Mantua and Verona, we others caught at his suggestion, and it at once became a definite plan. Ultimately, no harm befell us, and we all emerged from the walls of Mantua safe and sound, yet with an unmistakable sensation of relief, and with the conviction that we could advise no one to follow our example.

Though now so little before the public, in those days

the Quadrilateral was a familiar term. It was the word that weighed most heavily on Italian hearts; it was the stronghold of Austrian power in Italy, and with Mantua at its southern extremity armed to the teeth and supported by three other fortresses, the barrier which hindered the captive provinces from regaining their freedom seemed insurmountable. The two southern angles of the Quadrilateral were Mantua on the Mincio and Legnago on the Adige: Peschiera on the Mincio was at the north-west point at one end of Lake Garda, while Verona—the most important in size—spread over both banks of the swift-flowing Adige, which cuts the city in two. The Austrian army, distributed in the vast intrenched camp and tower-crowned heights round Verona, was so incredibly large that we forbear to give the figures. But the strength of Mantua lay in concentration, in its impregnable walls, in its reputation of yielding to no enemy but famine, and in its menacing position down among the very plains of Italy, with, so to speak, the eyes of all Italy directed wistfully to it. Verona amazed us by the magnitude of its garrison of tens of thousands, yet did not strike awe into us as did the armour-clad Mantua.

As far back as 1861, and in the end of May, we found ourselves again in Bologna after an interesting visit to the City of the exarchs. Our intention was to proceed to Venice, when, of course, the direct and easy road would have been by Ferrara and Padua. It was then that the suggestion of a detour by Mantua and Verona was made: the mention of the former—so little known and so little visited—was irresistible, and we were all of one mind, insisting to each other that as British subjects we were safe from risk in entering

two of the fortresses held by Austria. The leader of our little party had only to make the sign, and without a shade of misgiving we were ready and eager to follow.

First, as to Bologna, which had been our resting-place for several weeks. A stay there gave us curious experiences of its climate : for instance, snow had lain on the streets early in May, but by the end of the month (to use the expression of a resident, who enunciated the word with a ringing emphasis on the letter *r*) the heat had become "ter-rible." The out-of-door habits of men and women had undergone a complete change. The main work of the day—*i.e.*, the market in the open streets—had all to be accomplished before nine in the morning ; and even then the vendors were under shelter of huge white cotton umbrellas poised over the little carts of vegetables. And in consequence of the sudden heat we all agreed that evening drives on the well-watered promenade outside the city wall were the only admissible form of exercise, when a kind Bolognese friend generally accompanied us and described the chief points of interest. Then we were able to have a glimpse of Italian beauty, or scrutinise the manly bearing of soldier groups of the national army of Italy, a large body of troops being then quartered in Bologna under General Cialdini.

On entering by the Porta S. Mammolo after one of these evening rides an amusing anecdote was told to us as illustrative of the state of Bologna little more than a year before. The officer in command of the National Guard was returning at dusk from the country in a phaeton with his wife, a servant being on the seat behind, when, having just driven within the gate, a band of brigands suddenly surrounded them. In a twinkling the horses' heads were held, the servant

was gagged, and in the moment of surprise his brace of pistols was cleverly abstracted from the gallant general's side. Resistance was vain; the weapons secured, no further violence was offered, and the general and his wife were suffered to continue their homeward course through a few adjoining streets! The story was told to one or two friends in strict confidence, and of course gradually oozed out. Further, we were assured that about the same time the diligence starting for Florence had been robbed in the streets of Bologna in open day. Fortunately for us, these narratives were by-gones, and the improved security within the city was something marvellous to have been effected in so brief a time.

One more story of brigandage we shall, however, recount, which caps all others for its audacity, and which also shows the condition of the district at a few years' earlier date.

In 1848 a town not far from Bologna was the scene of an exploit of the notorious brigand Belloni, better known as "Il Passatore." Several editions of the story have appeared, but the substance of all is as follows. This papal town was then held by a detachment of Austrian soldiers. One summer evening in the crowded theatre an impatient house demanded the drawing of the curtain preliminary to the first act. There was unusual delay, and when at last it was upraised, "Il Passatore" and his armed band occupied the stage, with muskets aimed at the affrighted audience. The chief stepped forward and in courteous words informed the house that every door and outlet were secured, that those who sat still might rely upon his word that they would be safe and uninjured, but that the first to rise or move should be shot down. He next



stated that he should levy a tax per head, which he then and there collected, taking care to extort a double contribution from the rich man, and a heavy ransom from the municipal authorities. Not one man in the audience carried arms, and each was aware that one of their number rising might be the signal for a wholesale massacre. The gang made off with their booty unmolested, and it would be hard to say whether the Italian mind felt more admiration at the matchless audacity of the exploit or disgust at being so plundered. Although the bandit escaped at the time, he was soon afterwards hunted down by the Austrian military and paid the penalty with his life. The tale was told to us by an unimpeachable authority.

At length the start for Mantua was made, and two hours' journey by rail took us from the splendidly fertile plains of Bologna, through a veritable garden of vines and mulberries, on to the old Roman city of Reggio. The richness of the soil was passing description, it being mostly covered with a network of vines which flung their trailing branches from tree to tree in every conceivable form of festoon or garland. We were four of a party, three Scots and one Italian—namely, we two sisters with our uncle Dr Hugh Falconer, and the distinguished Professor of Geology at Bologna, now rector of its university. Our friend Professor Capellini was some little anxiety, as, being an Italian subject, we were not sure but that difficulties might arise in passing him across the Austrian frontier. We begged of him to reconsider his plans, but he was all eagerness to accompany us, and declared that he would run the risk.

At Reggio, where we left the rail, we could only hear of one carriage large enough to convey ourselves

and luggage to Mantua, and breakfast at the hotel was enlivened by a series of clamorous visits from the knowing *vetturino*, who after each sally lowered his price. On a threat that rather than encourage extortion we should proceed by train to Modena and procure a carriage there at the current rate, he at once changed his tone, and agreed to half the sum first asked, on condition that he should furnish three instead of four horses. With the voluntary help of several of the lawless-looking crowd, who swarmed about the hotel and took a keen interest in our proceedings, the luggage was quickly made fast on the carriage. Our destination was an evident surprise to them, and there were many comments — *sotto voce*. The men of Reggio were notorious for their ready use of the stiletto, but we were hardly prepared for such an assemblage of reckless-looking characters as thronged the quaint narrow streets. They gave one the impression of so many brigands waiting to engage in some deed of daring or of violence. The broad-brimmed hats which they wore had received very rough handling in at least one campaign, but the irregularities of outline did not lessen their pictorial effect. These men were probably only holding themselves in readiness for the expiration of the truce, and seemed quite happy smoking a cigar and watching the brisk sales at the portable grain and vegetable counters, the business of the shops being carried on out of doors by women in the shady streets.

From its position near to the frontier, Reggio had to face great disadvantages, and two wrecks of buildings which attracted our notice were evidently not the ruins of ages. We had meant to find the house assigned by tradition as the birthplace of Ariosto, but we had been

delayed by the tedious and unsatisfactory system of bargaining, and were anxious to push on.

Up a short incline outside the town the horses ploughed their way through sinking dust a foot in depth and like so much powder; but once on the summit of the slope, we gained the excellent road—a long avenue edged with mulberry- and poplar-trees—through luxuriant corn-fields and rich pastures, with an occasional crop of flax in bluest bloom or glowing crimson clover. One backward glance we cast on the fast-receding flanks of the purple Apennines, their outer ridges a mass of undulating hills which presented no bold mountainous features, but rather a natural fertility enhanced by careful cultivation.

In entering the country of Virgil it was natural that each of us in silence should indulge in a meditative train of thought, and one could not but remember the apostrophe of Dante to his illustrious master and guide. Was ever tribute rendered in simpler or nobler language?—

“O degli altri poeti onore e lume,  
Vagliami il lungo studio e il grande amore,  
Che m’han fatto cercar lo tuo volume.  
Tu se’ lo mio maestro e il mio autore.”<sup>1</sup>

In reading for ourselves the verse of the Mantuan bard, it is strange to note how often and how aptly his delineations of the face of Nature then fit the features and the cultivation of our own times. He did not even omit “the crop of flax that burns the

<sup>1</sup> “Glory and light of all the tuneful train!  
May it avail me, that I long with zeal  
Have sought thy volume, and with love immense  
Have conn’d it o’er. My master thou, and guide!”  
—In the Rev. H. F. Cary’s translation.

ground," and the brilliancy of which had excited our admiration.

Before reaching the Austrian outposts we stopped for refreshment at a small town, the battered gables at the northern end telling their own tale. Here our *vetturino* had to be left behind, as his passport proved not to be in accordance with the formula prescribed at the imperial police office. He however provided us with a good substitute, who, besides being known at Mantua, possessed the requisite official document, which entered into a curious description of his person: his eyebrows were minutely described as well as his eyes.

It was not until nearing the Po that we traversed the short space between the outposts, and exchanged the banner of the cross of Savoy, with its gay colours of red, white, and green, for the black eagles of Austria, which to our eyes looked sombre on their ground of uniform yellow. Two active Italian soldiers (Bersaglieri, from their dark uniform and plumed hats) waved us a friendly farewell: they were assured of our sympathies, for who could have travelled in Italy during this phase of the nation's history and not have been stirred on behalf of the gifted people struggling for long-lost liberty? Involuntarily the old Tuscan lines of Filicaia's noble sonnet came to one's mind, and how fitly they applied to the position at the moment of the richly endowed country! Hers was still "the fatal gift of beauty," her victorious battles had still been fought by other armour, and, "victress or vanquished," she was still in bondage!

Perhaps only they who, like ourselves, had compared the joyous freedom of the liberated States with the thralldom of those under an alien rule, could fathom the depth of ill-suppressed bitterness pervading all

classes of the Lombard-Venetian provinces. We were soon to be witnesses of the openly expressed hatred of the people of Venice; the sullen endurance of the Veronese, if unspoken, was none the less real. A captain of Piedmontese cavalry told us that on the day of the Austrian retreat, when his regiment entered Milan with Victor Emmanuel and the French Emperor at the head of the allied troops, the Milanese women rushed out shedding tears of joy, and clasped their arms round the legs of the fiery chargers, in their wild delight trying to drag the men off their saddles so as to place food and wine and all they had to offer before their deliverers. The young officer added that none witnessed the scene unmoved, and it had touched him more than any episode of a sanguinary campaign.

As we now entered the Austrian frontier station our feelings were very mingled: we were obliged to be circumspect, and one of us could confess to no little awe and much of that sentiment which the Italians expressively term *antipatia*. As was to be expected, our Bolognese professor was the first difficulty, and for some time the authorities could not satisfy themselves as to the validity of his passport. Their suspicions were roused, and he was summoned before the assembled officials, who subjected him to a sharp cross-examination, and did not believe in a rather risky journey undertaken to see a few fossils. After what seemed an interminable delay, he came out with a police permit good for so many days at Venice, with strict injunctions to report himself at the police office immediately on arrival there. Considering all the circumstances, one can well forgive their vigilance. We two sisters had not stirred from the carriage, and having deputed a vicarious explanation of our identity,

the chief—a close-cropped German—and his secretary—a swarthy, ill-looking southerner—came out and severally inspected us. Each thrust his head in at the carriage window to make his own observations, and to ascertain if the passports tallied with the individuals. The secretary did not seem satisfied, but made no remark; he only eyed us doubtfully and cast furtive glances at the two vacant seats, as if he smelt gunpowder, or thought some contraband of war was concealed beneath the cushions! He and his chief were perplexed, and looked, as we Scots say, “raised”—another word for excited in an angry sense—but there was no incivility. Four travellers seeking admittance to Mantua for mere pleasure, and two of them ladies, was so much out of the range of their ordinary experience as to take their breath away! and it was only natural that the officials should deliberate before giving us the necessary permission to pass their lines. Finally, the chief official suddenly discovered that the passports of the three British subjects were correctly *en règle*, and that no objection could be sustained against them. We were told to proceed, and perhaps as an act of grace to atone for the irksome detention, our baggage was allowed to pass unopened.

The condition of the soil to the river's edge might alone have suggested a military occupation, as much as did the neglected strip of debatable territory between the two sentinel-posts. Strange that the few scattered vines running wild in that no-man's-land should still be green and fresh in one's garden of memory!

A ferry-boat took us—carriage and all—across the muddy waters of the Po, when we had a glimpse of earthworks thrown up on its northern bank, dotted at intervals with small loopholed and circular forts.

The ferry-boat was manned by tall Teutons with red sun-blistered faces, whose heads, almost shorn of sandy hair, were but partially covered by tight foraging-caps. We had stepped suddenly among an alien race, whose conscious air of authority let us know that they were the masters. Throughout the expedition we found them perfectly civil, and never had to complain of any want of courtesy.

The plain became less and less fertile as we distanced the turbid Po and approached the more tranquil Mincio. The bard of Mantua, in singing of her "verdant plain," tells us that "the great Mincius winds in slow meanders, and hath fringed the banks with tender reed." The thinner crops were to be accounted for as the desolating effect of recent warfare, and not from any degeneracy in a soil always rich and alluvial. Only one village was passed, which swarmed with Austrian soldiery, and our driver urged on the horses over the flat dusty road, knowing well that should the fortress gate not be reached by sunset we should all be left benighted in that wild and depopulated region.

When at last the mass of strong battlements and towers rose clear before our straining eyes, the sight was indeed one worthy of "Mantova la Gloriosa." But its distance sadly deceived us, and the long day's journey was not yet over. Mantua, although not on elevated ground, is seen many miles off in the surrounding plain, and when we reached the reedy margin of the lagoons encompassing the city, we were obliged to make a round of several miles to gain the causeway leading to the only gate allowed to serve for ingress and egress since the beginning of the war. That last hour's ride was a memorable one: with his watch in his hand our chief kept count of the minutes, the still, sedgy lakes and the

frowning ramparts with their deepening shadows furnishing no lively distraction of thought. How silent we all were ! The weird picturesqueness of the approach can hardly be delineated. Sheer out of the water rose the walls, massive and grand, darkening in the dying light, while the elevated points of campaniles and towers were burnished by the shafts of a glorious sunset. There was no movement of air to stir the reeds and bulrushes bordering the lagoons, bordering as they did in Virgil's time, when "marsh with slimy rushes overspread all the pasture-grounds." The stillness was absolute : the reeds neither rustled nor murmured. We had never approached a city that could be likened to this.

Happily for us, our fears were not realised. We were in time, though only just in time, and it was with a feeling of relief that we crossed the resounding drawbridges, over moats of stagnant water, passing now and again under archways tunnelled through mounted forts—over one more drawbridge, and on through nameless blocks of masonry.

And how about hotels ? I for one had misgivings that we should not find one open. In this respect, however, we were again fortunate, and although the two hotels which stood opposite to each other in the principal street were shuttered and blinded, the arrival of a carriage with *forestieri* from the Italian side made no little sensation : in an instant doors were flung open and shutters unclosed to make us welcome. We, tired and dusty travellers, were soon seated at a comfortably improvised table, our dinner enlivened by the garrulous waiter, who in breathless haste began to expatiate on the vicissitudes of his native Mantua. He broke into loud complaints of the despotism of imperial rule, and exclaimed that a word spoken on this topic might lead



to instant arrest and imprisonment, as police spies followed at a man's heels, noiseless and inseparable as his shadow. We were obliged to silence the impulsive Italian, who by way of illustration of his subject had pointed to the wall, indicating with gestures that there might be eavesdroppers beyond to report him on the morrow!

Next morning, though the sun rose with fierce power, we were determined to lose no time, and started early in an open carriage so as to gain a general idea of the city, and if possible get a glimpse of those wonderful fortifications. We made first for the great deserted square, the Piazza S. Pietro, where we had a view of the machicolated abutments of the Palazzo Imperiale, which was really the old palace of the Gonzaga family, "who governed the city in her ducal and palmy days, when her Court was one of the most brilliant in Italy." Its exterior and that of the other public buildings and palaces were grand and imposing, though all were more or less mouldering from the touch of time, and inexpressibly gloomy from the pervading silence and desertion. There were no citizens about—all the noble families had fled, and we could not help drawing comparisons between the glorious city of former centuries and the sad captive city which we beheld.

Our uncle and the professor, versed in classical lore, were desirous of seeing the famous Trojan frescoes of Giulio Romano (whose works are nowhere exhibited so well as in Mantua), and alighted for the purpose, whilst we others drew up in a shady corner of the piazza and listened to the comments of our driver on the hapless fate of his city. There was so much to be compressed into that one day that we deliberately declined to see those masterpieces of Giulio Romano, of Mantegna, and

of others, reserving them for some day in the dim future, and preferring to glean as much as was possible of the then existing conditions of life within those walls. We had, in truth, no heart for pictures. It was as if the din of battle haunted our ears: would not the truce end in two short weeks, when that mortal struggle was due to recommence? The priceless works of art, the unique buildings, and above all the overshadowing presence of the poet—what were they all in view of those impending issues of life and death?

Perhaps the extreme heat kept the Mantuans all indoors, whilst we unconsciously furnished an illustration of the common Italian proverb, that only dogs and English expose themselves to a scorching sun. While waiting for our companions, only one straggler crossed the piazza. This was a priest, and his appearance was the signal for an outburst of lamentations and invectives on the part of the driver, who accused "I preti e gli Austriaci" of being the authors of all the existing misery and desolation. He hissed out the words between clenched teeth, shaking his fist at the unconscious (?) priest, who was barely out of hearing: then his passion subsiding into grief, the excitable Italian quieted himself by repeating over and over in a subdued monotone the melancholy words, "Mantova è morta, è morta." And in fact it could only be compared to a city of the dead. We drove on through streets grass-grown and more gloomy than those of Ravenna: there it was the decay of ancient empire; in Mantua were superadded the voluntary exile of every noble family, and the ill-concealed aversion of the helpless citizens to foreign rule. All signs of life and activity seemed merged in the central thoroughfare where the hotels stood; few soldiers

were out, and we passed nothing but rows of blinded windows, with here and there a palace serving as a magazine for sacks of flour and other army stores, the fortress being then provisioned for two years for its garrison of 7000 men. Skirting the city wall, we found ourselves in what had once been a fine street: here we pulled up to reassure ourselves of the fact—two sheep feeding on the grass-grown pavement—a man in charge of them! There was grass—grass everywhere.

Our coachman having had directions to drive to all the points of interest, next took us to one of the ponderous closed gates, where stood a curtained van in which there was a Mantuan in fetters. Close to it were his two unsaddled horses: their owner had that day attempted to escape with them to Piedmont, and had actually reached the frontier, when he was intercepted and brought back in irons. Military law forbade the export or withdrawal of horses, and we shuddered to think of the punishment that might await the unhappy offender. If despair was ever written on a face, it was written on his, and it comes back to one even at this far-distant day.

The Austrians naturally discouraged the circulation of any map or chart that would make public their plan of defence, and nothing could be obtained as a guide. In utter ignorance we were soon guilty of trespassing on forbidden ground. Forgetting our driver's enmity to the "Austriaci," we trusted to his discretion, and he drove us along the line of ramparts up to a cluster of gun-mounted towers which commanded one of the closed gates. Here we passed under an archway leading to an open court, which was scarcely gained when we were challenged by a soldier on guard, who

rushed out shouting to us to stop, and signalling to the driver to pull the horses' heads round. He became livid with anger, but did not lose the power of speech, which he launched in a volley at the driver, who feigned guileless innocence: the latter had evidently led us there with intent to irritate, as no citizen could have been ignorant of the secrecy enforced at the works and fortified gates. The sentinel, somewhat mollified by our protests, was joined by another more violent than he, who in a voice pitched to terrorise shouted to us that none but the officer in command dare pass by that way. After a consultation between them we were, however, allowed to withdraw, muttered imprecations following our gratified driver.

As the chief of our party remarked with emphasis, this incident might have had a very awkward ending. It reminded him of an adventure a few years before, when in the district of Como (which was at that time held by the Austrians) he, a peaceful traveller, was "detained" for some hours as a spy. After a minute examination of all the letters and papers on his person, most fortunately a note was found among them from his old friend, Baron von Hügel, for some time Austrian Ambassador at Florence. But for that note there was nothing for him but imprisonment until his identity could be proved; its discovery procured his instant release.

To avoid any other scrape, we next tried to obtain a view of the fortifications from the outside, and for that purpose traversed the series of drawbridges and the long causeway, taking the direction of the railway station, which was about a mile distant. The towers and walls seemed to all of us to be in the highest state of efficiency, the strongest forts looking as new

as if the engineers had only just built them. The country round was very flat, and would have been devoid of interest were it not hallowed by the memories of that

“Anima cortese Mantovana  
Di cui la fama ancor nel mondo dura,  
E durerà quanto il mondo lontana.”<sup>1</sup>

The name of Virgil will illumine Mantua when her glory as a great stronghold of the nineteenth century will have passed away. Our indefinite plan to make a pilgrimage to Andes, reputed to have been the place of his birth, was not carried out. The ancient village is now identified with the modern Pietola; but it was a few miles outside the walls, and, to use the bard's own words, we found ourselves “scorched with raging heat.” We were curiously verifying in our brief experience the conditions that he recorded in his verse.

On our entrance the previous evening we had all been too much preoccupied with the stern aspect of the fortress to pay much heed to the evident unhealthiness of its situation. Mantua, as we saw it, stood on a continuous series of artificial lakes, filled by the waters of the Mincio. When in possession of the French, these had been drained with a view to improve the health of the place; but after a time the dams and embankments had been swept away, and the Mincio was allowed to spread over its old ground. Was it very different from what it had been before the Christian era, when we are told that “the overflowing river bursts from its banks away and overspreads all around with slimy mud, whence the hollow

<sup>1</sup> “Courteous shade of Mantua! thou whose fame  
Yet lives, and shall live long as nature lasts!”

—In the Rev. H. F. Cary's translation.

dikes sweat with fetid vapour"? How clearly the poet painted from Nature!

The heat and glare and dust became so oppressive that the carriage hood and a couple of umbrellas gave little protection, and after seeing two of the largest churches, where we found one or two kneeling women, we were all thankful to go straight to the hotel, and were compelled by the extraordinary temperature to keep under shelter of a roof for the remainder of the day. We had never experienced such heat in Italy, not even in midsummer.

The quiet of the evening was broken by sounds very audible from the range of open windows; the heavy tramp of an army and the clank of officers' swords soon made themselves distinct. A sea of soldiers came surging up, not in military rank and file, but in knots of twos and threes, the wearer of a brilliant uniform consorting with a fellow-soldier whose facings indicated a different regiment. They were magnificent soldiers; all above the average height, muscular, and in clothing admirably adapted for the climate, hundreds of privates being in suits of white "jean" or linen or other hempen manufacture, faced with crimson, blue, green, or most commonly yellow. From the length of time they took to defile, the garrison must have turned out in a body. Croats and Czechs joined with Slavs and other races owing allegiance to Austria; naturally no Italians mingled with the crowd, and among all these thousands we noted only a few Hungarian hussars, remarkable by their peculiar hats and light blue uniform elaborately embroidered in white and silver. It was significant that then Hungarians had been withdrawn from service in Italy, as being in

too close sympathy with the Italians—at least, such was the current report.

We could not disguise our admiration for the superb appearance and appointments of those Austrian troops. It being a *festa*, the men were on their way to the piazza to listen to the music of two of their unrivalled bands, whilst dark-eyed Mantuans crouched in the gateways, casting looks of sickening depression and despair at their masters, who strode haughtily on with real or affected indifference.

It had been arranged that we should take the first train next morning to Verona, and we all breathed more freely to find ourselves at the railway station—out, and well out, of the armour-clad fortress.





II.

STUDIES OF SCOTTISH SCENERY  
AND HISTORY



## THE BANKS OF THE FINDHORN.

It has often been remarked that the ravines which score the surface of Scotland are the physical features to which that country owes nearly as much as to her blue mountains and lakes, in that they confer picturesque and beauty on tracts that otherwise would be bleak and unattractive. We now attempt to jot down a few recollections of a very remarkable river-ravine which should be better known. It is that of a Highland stream which has cut a channel for itself through the old gneisses and the sandstones, grey and red, of the province of Moray,—one, however, of the most fertile, if not the most fertile, of all the Scottish counties, with a climate, in spite of its northern latitude, exceptionally fine.

The river to which we wish to direct attention is the Findhorn, that about a mile and a half to the west of the town of Forres sweeps through the plain before reaching the sandy shores of the bay of its own name. For the last seventy years this river has been comparatively tranquil, and has kept pretty well in its channel, since occasional “spates” do not appear to have worked much destruction. But tales of “the flood of ’29” are still handed down from father to son, and will continue to be handed down to children yet unborn. At the narrow gorge known as “Randolph’s Bridge,” some eight miles above Forres, the Findhorn, when at

its normal height, rushes with its whole volume at a great depth through a cleft in the rocks only eight feet wide. Yet, according to Sir Thomas Dick Lauder,<sup>1</sup> during the memorable rise of this river in 1829 "the inundation covered a space of something more than twenty square miles in the plain of Forres." The authority of this author has never to our knowledge been questioned, and the statement is given in italics in his fascinating volume on the floods of Moray. He relates how the river rose to a height of 50 feet, and that "the waves, at this meeting of the waters" (of the Findhorn and the Divie), "were terrific, tossing themselves 20 feet into the air, and throwing up the drift trees and other bodies to a great height." There was enormous loss of land and of property of all kinds, and incidents of hairbreadth escapes of the terrified inhabitants from isolated cottages, who in most cases were found clinging to their chimneys and roofs, furnish to this day exciting tales for many an ingle-nook. Finally, the voyage of five sailing-boats from the seaport of Findhorn, manned by salmon-fishermen, and, headed by the *Nancy*, sailed over hedges, dykes, and meadows to Forres—over a great seething inland lake. It was at the risk of life that this mission was undertaken: the boats were often nearly capsized in the swirling current, their greatest danger being from drifting trees, drowned cattle, and other heavy wreckage running foul of them. One cannot read the simple record of the log-book of the *Nancy* without admiration for the fishermen of Findhorn.

For a comprehensive account of the havoc caused by

<sup>1</sup> An Account of the Great Floods of August 1829 in the Province of Moray and adjoining Districts. 8vo. Edinburgh, 1830. See pp. 101, 157. A third edition was published at Elgin, 1873.

“the flood” in Morayshire we cannot do better than cite that given by a great living writer.<sup>1</sup>

Before quitting the subject of river-action I would refer to the magnitude of the effects of a single great rain-storm, as illustrated by one of the most memorable examples ever experienced in Scotland—the famous Morayshire floods of the year 1829. There had been a season of unusually hot weather during the summer, and this was followed in the first week of August by such a downpour of rain as does not seem ever to have been equalled within historic times. The suddenness with which the waters rose, the great size the streams attained, and the unusual length of time that the ‘spate’ endured, combined to work an altogether unprecedented amount of havoc in all the rivers descending from the northern flank of the Grampians through the counties of Nairn, Moray, and Banff. In some of the narrow gorges the streams rose forty or fifty feet above their normal level, and such was the force with which the swollen waters rushed along that well-built stone bridges were swept away, sometimes in one solid mass that shot down the flood for some yards before it went to pieces. Hundreds of acres of fertile land were torn up and their soil carried to the sea. Banks of clay forty feet or more in height were cut into, and huge slices of them sank into the rivers and were soon demolished.

Our object, however, is not to talk about the devastations of the Findhorn, but to say a few words about its surpassing beauty. It has often appeared strange to us that this, the loveliest of our Scottish rivers, should be so little known beyond its own immediate district, and should be so little visited. One can readily understand that before the days of railways it was difficult of access, but now that there is a station at Forres on the Highland Railway, and another at Dunphail, a stone’s-throw, so to speak, from the river and its scenery, that old difficulty has been removed.

<sup>1</sup> Sir Archibald Geikie, ‘The Scenery of Scotland viewed in connection with its Physical Geology,’ 2nd edit., 1887, p. 31.

In size the Findhorn is nothing remarkable, its length in a direct line from source to shore being something over sixty miles, while its actual course, including its many windings and curves, is estimated to be about ninety. It has neither the length nor breadth nor the majestic flow of its near neighbour the Spey, nor can it be compared in size with the Dee, the Tay, and the Tweed. It is the river of black salmon-pools and foaming waterfalls, of wild "spates" or floods, and, we need hardly say, is not navigable. Yet although only a Highland stream, to our mind it ranks in beauty before all others, and St John, in his 'Wild Sports of the Highlands,' aptly describes it as "the rapid and glorious Findhorn, the very perfection of a Highland river." It is known to working geologists, who hold it as a grand example of the excavating power of running water; a few artists have found it out; and sportsmen, keen in pursuit of game, may have followed it from its rise in the far-away bleak morass of one of the Monadhliath mountains of Inverness-shire down to its outflow in the Moray Firth. But the world at large knows nothing of it, and tourists are little likely to penetrate to that high inaccessible region over which the frequent storm-clouds gather and break.

As a brawling brooklet it runs down "o'er the muir among the heather," gathering in strength and velocity as, fed by every side rill, it dashes onward, never a sedate and gentle streamlet, but almost from its birth showing a character of wilful impetuosity. Its course in its upper section is wild and picturesque—often between high hills, their slopes covered with close short herbage, and often between bare rocks. Through a wonderful narrow granite gorge it enters the green vale of the

Streens as a good-sized stream, which in the flood of '29 was formidable enough to strike terror into the hearts of the few inhabitants. But this district of the Findhorn, the haunt of grouse and red-deer, and also its next lower section tenanted by the roebuck and blackcock, although eminently romantic, cannot claim to show the scenery which makes the river so noteworthy. The famous scenery begins a few miles above Dunphail, and extends to within four miles of Forres, each bend of the river, each section of its banks, more beautiful than the other. At several points the cliffs are sheer, crowned with foliage, while in a lower stretch the Findhorn flings itself headlong over ledges of rock into a series of dark salmon-pools, each bank showing a variety and luxuriance of foliage hardly to be looked for in the far-away north. Now weeping-birches are in the ascendant, and clothe in graceful clinging forms the precipitous crags; now red-limbed Scotch firs stand out straight and sturdy amongst a thicket of larch and beech and bird-cherry, while holly and mountain-ash seek roothold in every possible crevice and cleft. Here the prominent feature is a group of splendid beeches, but above all the brilliant red of the wild cherry in autumn stands out with telling pictorial effect amongst the fading leafage. The dark fir forests, which form the grand background, throw out in distinct relief the deciduous foliage, where every tree shows its own individual habit and tint. And who can ever forget the pervading glow and scent of the purple heather!

A sketch lies before us of a portion of the right bank, which dips down to nearly ordinary water-level, where a lordly oak overshadows a mossy dell. In this well-remembered spot two great boulders lie at the foot of the steep height, flanking this exquisite glade, which

serves as a fostering hollow for rare and tender ferns, and where neither summer sun nor summer rain can penetrate. The slope is faced with a thicket of tall juniper-bushes and a tangle of bramble, intermingled with blaeberrries and cranberries, and another fruit less abundant, which we children, being in want of a distinctive name, dubbed as "deer-berries," but which we have little doubt were the common cloud-berries. These may be identical with the "clowdesberry," which Camden speaks of as growing plentifully on the boggy tops of mountains in England and Scotland, and especially in Norway. "The Northern Peasants call it Cnoutberry, and have a tradition that the Danish King Knute, being distress'd for some time in these wasts, was reliev'd by feeding upon these dainties."

Those who know the Findhorn at its best are the anglers who have unlimited time at their command, and who scramble down to the water's edge, and wait in patience for the cast of their lines in the peaty pools. None know better than they how black these pools can be. An old friend, whose cottage was perched on a rocky platform overlooking the stream, used to declare that its most fitting name was "Inkhorn," and not Findhorn. Men fishing for salmon stand and watch for the curious sight of the fish making its way up against the current, leaping up a foaming waterfall from one of these dark pools up to another. It is most strange to see a salmon, baffled in the first attempt, leap and leap until it has attained its object. How marvellous the instinct that guides it! Has it ever been, or can it ever be, explained?

The headlong impetuosity of the Findhorn is maintained throughout many miles of this richly wooded wilderness. Sometimes whirling in curves round birch-



clad cliffs, or rushing between rocks grey in tint at one point, and at another between upright walls of yellow or warm red sandstones, or at the foot of marvellous precipices of pink granite, its torrent-like character is ever the same. Where it emerges from the woods and rocks and streams into the open, the view of this later stage of its career is magnificent. In the immediate foreground are the forests of Darnaway and Altyre, through which it sweeps down across the most fertile of plains, dotted with meadows and trees and houses, its coast-line on the near shore of the firth defined by gleaming white sandhills, while on the farther coast of the blue sea are the bold Sutors of Cromarty, with the mountainous peaks of Ross, Sutherland, and Caithness in the dim distance. Most heartily we endorse the opinion of Mr St John, that "it is worth all the trouble of a voyage from London to see this view alone."

Lest we should be thought excessive in our praise of "the river," let us adduce the testimony of two friends who had explored its banks, but who, *alas!* are no longer with us to speak for themselves.

One was Dr Carpenter, the distinguished naturalist, who with Mrs Carpenter came to us for a few days on their return from a tour in Scotland. They had stayed at Forres, and thence had made several excursions to the banks of the Findhorn, the beauty of which had taken them by surprise. Those who knew Dr Carpenter will remember his conversational powers, and that he talked—and talked well. As a rule, men of science are chary of superlatives; but on this subject words were not measured, and Dr Carpenter gave expression to his unbounded admiration for the scenery and its effect upon him in almost indignant terms, an opinion shared by his wife. His repeated exclamations were, "It's not

known! No one has ever heard of it! There's nothing equal to it!" Surely "the river" was praised to our heart's content.

Again at Oxford, in spending an evening with Jowett, the lamented Master of Balliol, when he had a houseful of guests, it happened after adjournment from the dinner-table that we were seated beside him in the drawing-room. In spite of his uniform kindness, we had up to that time stood somewhat in awe of one who was so much looked up to by his fellow-men, and who was, as it were, placed upon a pedestal. He was on this particular evening in the mood for a chat, and gladly we listened. The conversation turned upon the finest scenery of our own country, and that it challenged comparison with much that travellers went abroad and far to see, when the Master startled us by saying that the most beautiful river scenery to his mind in Great Britain was that of a river in the north of Scotland.

"There is nothing in my opinion equal to it. It is the Findhorn in Morayshire. But you are Scotch, you may probably know it?"

The words came out in his usual short, crisp sentences.

The river! We had been born and bred on its shore, and when this was proudly owned to our host there was an end to all our far-offishness and awe. Our host was no longer the formidable Don, and while he discoursed to our delight on its features, he felt that he had a listener in full sympathy.

"We have nothing equal to it in Great Britain!" was his summary and repeated exclamation. There was no hesitancy in his opinion.

"The Wye is very beautiful," we haltingly suggested, "very lovely and peaceful, but it has not banks like our Findhorn."

On this point we were perfectly at one, and the remembrance of that evening and that conversation can never be effaced.

One favourite spot has undergone a change, since it can no longer show the animated scene which it presented in days of old. This was "the heronry"; but at present it is only so in name, for, with the exception of a single pair which arrives every year at nesting-time, their old haunt is forsaken by the long-craighed herons. They used to congregate in great numbers in this sequestered spot on the left bank of "the river," and built their nests in a grove of tall trees which grew close down by the water's edge. Behind this bird-colony was the green mead of St John, while the opposite bank rose sheer to a height of ninety feet above the stream. The trees inhabited by the herons were like so many dead skeletons bereft of their leaves, and it was fine sport for us children to stand on the path which runs along the high overhanging bank and persuade the owners of hands and arms stronger than ours to throw stones down from this height among the herons, when a cloud of angry and noisy birds rose up from the nest-laden trees. Have too many stones been thrown? or have the rooks and jackdaws, which had established a large settlement close to the heronry, devoured all the herons' eggs? Besides these marauders, it is known that the noble birds prey on the food of the salmon, and are therefore detested by the salmon-fishermen, who would be loath to leave them in peace.

Apart from its varied natural history, the Findhorn is rich in human interest, and is pre-eminently the river of romance. How its scenes and their legends appeal to the imagination! What tales could not its

cliffs and glens and dells reveal of bygone times! What section of those lovely banks is without its own story—true or traditional! The traditions which cling to its caves and heights are often grim and gruesome, telling of bravery and endurance, yet more often of cruelty and vengeance. Many of them recount incidents in the incessant warfare waged between the rival clans—the Comyns on the right bank and the Stewarts on the left. In “the battle of the lost Standard,” which was fought between the two clans at Randolph’s Bridge, Earl Randolph the Regent led his own men, while the Comyns were commanded by Alister Bane, son of their chief. After a sanguinary struggle, when the Comyns made a gallant defence, their position became desperate, and Alister, seeing that they were almost surrounded, flung his standard across the narrow gorge, and crying out, “Let the bravest keep it!” he paralysed his enemies by leaping over the abyss, and cut a way through the thickest of them. Although Alister made good his escape, it was only to meet his fate later in a more terrible form.

The Cave of Slaginnan (in Gaelic, Sloch-nan-cean), the cave of the headless Comyns, tells its story by its very name. It was there that Alister took refuge after “the battle of the lost Standard,” but his hiding-place was revealed by the treachery of one of his own followers who bore him a grudge. Sir Thomas Dick Lauder’s version of the tragedy is the popular one, and, we fear, “ower true”: we can only give it in brief. The entrance to the cave was so narrow that only one man could descend at a time, and it was certain death to him who should make the attempt. Alister was therefore called upon to surrender. “Let

me but come out," was his defiant answer, "and with my back at that craig, I will live or die like a Comyn!" For reply, brushwood was thrust down the hole, heap after heap of it, and set on fire as it was pushed in. His struggles to force a way up through the flaming mass were useless. His enemies swarmed round the hole, and when they considered that a sufficient quantity of burning brushwood had been thrust down to suffocate the unfortunate Comyns, stones were rolled over the mouth of the cave. They were all found dead, Alister Bane reclining in one corner, his head wrapped in his plaid, with his men around him. Not satisfied with this, the bodies were beheaded, and the heads of the dead men were one by one thrown into the fortress, which was defended by Alister's father. The old man wept as he kissed the fair head of his son—so runs the pitiful story. This tragedy finds confirmation in the fact that towards the end of the eighteenth century, when a green mound was opened at Dunphail with a view to enlarging the garden, five or six rude stone coffins were found, each containing a headless skeleton.

Another story, less painful, is told of the luckless lady who, like Lord Ullin's daughter, fled with her lover. Her father was the chieftain of the country, while her lover was a Dane. Mounted together on the same horse, they were pursued by her father and his men, and the lovers in attempting to ford the Findhorn were both drowned. They lie buried in one grave in the greenest of holms near Ferness.

A secluded stronghold within the district of "the river," but which has long been in ruins, has always had a peculiar attraction for us. This is the wild Lochindorb and its castle, which at a remote date

was one of the royal fortresses of Scotland. The earliest reliable record that we can find of it goes as far back as 1230, when a Comyn, Lord of Badenoch, made this fortified castle his home. It stood upon an island in the loch less than an acre in extent, and was approached by boats, the loch itself being about two miles long and at its greatest width about three-fourths of a mile. The Dorbock river is the outlet for the waters of Lochindorb, and after its junction with the Divie they enter the Findhorn below Relugas at a point which was one of the most notable scenes of disaster in the floods of 1829. Lochindorb is bare and bleak and dreary, its shores being low moorlands which gradually rise as they merge in the forests or stretch to the foot of the hills. Its insulated castle was occupied for a time by Edward I., who found it a convenient centre for his army to overrun the surrounding district. He halted at Lochindorb after a sojourn of nearly three weeks at the Abbey of Kinloss, where the Cistercian monks entertained him sumptuously. Lochindorb had a special attraction for the king, who, with his English deer-hounds and wolf-hounds, found exciting sport in stalking the red-deer and in wolf-hunts in the great fir forests which then nearly covered the Lochindorb country. He has the credit of having strengthened the defences of the castle, if he did not entirely rebuild it.

Again Lochindorb comes into notice in the reign of Edward III. The widowed Countess of Atholl was besieged in it with her infant son by Sir Andrew Moray, when Edward, hearing of her anxious position, marched from Perth with a huge army to her rescue. He raised the siege, Sir Andrew Moray escaping by the narrow pass of the Findhorn to Darnaway Castle, while Lady

Atholl, only too thankful to be released with her child, accompanied Edward to England.

Lochindorb has seen so many changes and had so many masters—coming in view in one century, disappearing in the next, to reappear in another—that we shall only refer to it when it was in occupation of Alexander, fourth son of Robert II., who was created Earl of Buchan, but was best known as the “Wolf of Badenoch.” As Lord of Badenoch he seized upon the Church lands, and was excommunicated by the Bishop of Moray from the “Holy Mother Church, to be cut off like a rotten and diseased branch, to fall headlong into the pit, there to be consumed by eternal fire.” The unfortunate monk who was the bearer of this document was at once ordered by the excommunicated “Wolf” to be lowered into the water-pit vault, and to be kept in it some hours. This dungeon was so far below the level of the loch that three feet of water stood permanently in it. The only entrance was a narrow aperture in the courtyard covered by a stone, and we are not told of any inlet or outlet for air. A prisoner could only stand in this watery dungeon,—any other posture would have been immediate death. It was well if the monk escaped with his life: he was not likely again to be the bearer of documents to “the Wolf of Badenoch.”

The reprisals made by the “Wolf” are matters of history. The inhabitants of Elgin were roused one night from their first sleep by the clatter of horses’ feet as a band of armed horsemen from Lochindorb rode down the street in the direction of the cathedral. This was followed by a cry of “Fire! fire! The ‘Wolf’! the ‘Wolf’!” which was shouted from house

to house, from street to street. The noble cathedral was soon in flames; the Church of St Giles, the Maisondieu, and the houses of eighteen canons, were in a few hours nothing but blackened ruins. The exploits of this doughty son of a king would fill a volume, but we must leave them and return to "the river."

To those who live within reach of its banks the Findhorn is a powerful personality: it is regarded as instinct with life and vigour, and it is not too much to say that its moods sway their lives. When it is whispered that "She is coming down!" the message is borne as if in the air from cottage to cottage within reach of her banks, and the dwellers therein are summoned and warned, just as if the old beacon-fires had been alight on the hills. After black clouds and rain on the distant mountains anxious groups wait and watch for the wall of water which in so many hours later, in heavy spates, is due to come roaring down like a great wave of the sea through a district where there has been perhaps little or no rain, and carrying all before it. There is admiration as well as terror among the spectators at the sight of this resistless force of nature, even when it is busy in the work of destruction. The quiet murmur of "the river" is less often heard than its rush and roar. There is a graceful allusion to it, characteristic of the writer, in the preface to Sir Thomas Dick Lauder's 'Scottish Rivers,' by the author of 'Rab and his Friends': "A river is an individual, a *totum quid*, and evolves itself, its glen or dale or strath, by a shaping spirit, and its own sweet, or it may be its own fierce, will, like our author's romantic, impassioned, Pindaric Findhorn."



But the portion of the Findhorn which transcends all other in pathetic interest is the range of white sandhills that bank the southern shore of its bay, guarding as it were the wide seaward entrance where "the river" meets the sea. The sandhills of Culbin extend nearly seven miles along the coast of the firth, with a breadth of about two miles. They cover the lost barony of Culbin, which dated back to the twelfth century, and which, according to popular belief, was overwhelmed by a sand-flood in a night. Although the final catastrophe was the work of a night, vast sand-mounds, during many years, had been accumulating along the coast at some distance to the west of Culbin, so that the materials for the catastrophe were ready at hand, and the end was sudden. The stealthy advance of the sand dammed back the Findhorn, and drove it eastward into its present channel, when, aided by wind and tide, it overwhelmed the village, which then stood west of the bar near the point where "the river" formerly entered the firth. Previous to 1694 it had flowed along the northern boundary of Culbin. The existing seaport of Findhorn is the third survivor of the name, its predecessor (the second Findhorn) having also been swept away by inroads of the sea. In the burying of Culbin "the river" had done its share, in carrying down the sand from its areas of sandstone to the sea, which in its turn, by the prevailing westerly currents of the firth, threw up the sand [and the wind drifted it] in mounds along the shore of the ill-fated lands.

In 1695 Alexander Kinnaird, on succeeding to the estate, petitioned Parliament for exemption from taxes, on the ground that encroachments from sand

during the previous twenty years had rendered Culbin valueless.

It is difficult to realise that so near our own times—only two hundred years ago—this estate of 3600 acres, known from the richness of its crops as the “Granary of Moray,” was buried by a great sand-storm, with its mansion-house and orchard, sixteen farms, its mill, and the cottages of several crofters. Its church, which stood on the borders of the estate, was among the buried buildings. In spite of the threatening inroads of the sand, the inhabitants clung to their dwellings until the night came, when all fled for their lives—never again to return to their old homes. These homes were not to be seen on the morrow, nor have they ever been seen since, nor has the site of mansion or farmhouse or cottage ever been traced. Twice during the century which immediately followed, the branch of a tree was laid bare by those shifting sands for a brief term. One was that of a cherry, which showed leaves and blossomed; the other was that of an apple-tree, which, if we are to believe the popular report, blossomed and bore fruit. Our own recollection carries us back to a time when, near to what was supposed to be the outskirts of the estate, a glimpse was had of the pointed gable of a dovecot, but it did not come into view a second time. The sandhills are composed of the finest white sand, their form and outline ever changing, the valley of to-day being perhaps the hill of to-morrow. As an instance of their incessant movement, we may mention that many years ago a crew of foreign sailors landed a cargo of spirits on the seaward coast of Culbin, concealing it in the sand. On their return to remove it they were unable to hit upon the spot, and no vestige of it has ever been found. Has any other district in

Scotland so weird a history as that of the lost barony of Culbin?

To a tourist who ventures to traverse these sandhills the journey will be toilsome and tedious. A still day must be chosen with but little wind, for the sparse growth of "bent" (the only herbage to be seen) is not enough to stem the treacherous drift, and in any case he will sink ankle-deep at every step. Should he attempt to climb one of the lower hills (some of them are nearly 120 feet in height) the view of the beautiful bay of Findhorn will be a reward. If low tide, the breeze will waft the sweet breath of the thrift which edges the bay landward. Then, but for the strong current of "the river" the bay will be almost bare, dotted with flocks of gulls and the red-billed pickietars; while if in spring, the banks of the sand-dunes will show a crowd of little folks who have been rowed over in cobbles from Findhorn, which, across the bay, shines white and bright in the sunlight. The salmon-wear is a prominent object: in olden days its enclosure was formed of stakes wattled with brushwood; now nets are used to connect the stakes. This mode of catching the salmon, which swim over and into the trap at high water and are thus left caught in the enclosure when the tide recedes, we are told by a quaint author, "is supposed to have been the device of the brethren of the abbey" (of Kinloss).

But in a storm when the wind blows hard no pedestrian dare venture on the sandhills of Culbin. Then no scene can be more desolate. The sand is in too evident movement, undulating in ridges like billows out at sea: the air is dense with it, as it enters eyes and ears and nostrils, and one's clothing becomes permeated and weighted with sand in the most unaccount-

able manner. To add to the desolation of the scene, the awful roar of the bar drowns all sound of the rising gale.

This ever-dreaded bar, and the shifting "Sinkie Sands" where the wild current of "the river" meets the salt waves of the Moray Firth, seem with the ceaseless tumult of waters—the unending unrest—to be a fitting close for the course of the Findhorn.

## THROUGH THE PASS OF GLENCOE.

OUR autumn excursion of 1878 stands forth in strong relief among the excursions of other autumns. It extended over only three short weeks, but it made so great an impression that now, after the lapse of several years, the events of each day, we might say of each hour, can be recalled and chronicled with the most minute detail. The impression was such that at the very thought of "the Highlands" a mental picture rises, delightful even at this distance for the mind to dwell upon. Did our enjoyment arise from the fact that the beauty of the scenery far surpassed our expectations; or had the charm its origin in the feelings aroused by a visit to one's native land—that land before all others—so that mountain and moor and loch were viewed through rose-coloured spectacles? But setting sentiment and spectacles aside, there was beauty everywhere—in the blue mountains, fir forests, and winding lakes, which, seen in sunshine and shower, seemed to change like fairyland in a transformation scene. I shall not attempt to describe our three weeks' sojourn. I will merely touch upon our first day's journey to the Inverness-shire Highlands, and give some of our impressions of the road.

On the morning of the 10th of August we took the train from Stirling for Tyndrum, then the farthest point to which the railway had been opened, and

before midday found ourselves in the midst of a region of poetry and romance, made classical by the genius of Walter Scott. The early sunshine had given promise of all that could be desired in the weather for the proposed long day's journey to Ballachulish, on the shore of one of the picturesque lochs opening on the Great Glen of Scotland, or, as it is more commonly called, the Caledonian Canal. But by the time that the train reached Callander a heavy shower veiled any view of the wooded hills and mountain heights in its neighbourhood. The same cause also obscured our sight of the romantic Pass of Leny, yet from time to time the struggling sunlight broke through the showers, and gave lovely glimpses of the Pass, clothed with its drapery of birch and other pendent foliage, and which proved so narrow at one part that, in gliding through, it seemed as if we could almost with outstretched hand have touched the rocky roots of Ben Ledi.

Emerging from the Pass, the train ran close by the low open shore of Loch Lubnaig, which had for its opposite boundary the inaccessible precipices of Ben Ledi, where "rose Ben Ledi's ridge in air," and on through the country of "Rob Roy MacGregor." What tales and traditions did not attach to each inch of ground! What associations did not the name of each hillside station awaken! As we proceeded onward, through heath and moss, and birch and boulders, one felt somehow as if the workaday world of fact had been left far behind, and that we had entered into the fairy-like world of fiction. We began to realise that there was a reality in romance, and here before our eyes romance in reality, and that the two were so blended together as to be almost bewildering.

Owing to the ominous increase of Scotch mist, we had

to imagine all the loveliness of Loch Earn as our train sped along near its precipitous shore. Yet here again we were able just to trace grand outlines through the moving mist, and the vigorous growth and vivid green of the foliage near to the margin of the loch testified to the genial character of its sheltered climate. But the scenery became more wild and bleak as the line, always ascending, left Ben Voirlich and other mountains far behind; and traversing a high, uninhabited district, bare of wood, which seemed an interminable sea of bare hillocks, we had ample evidence that the half-day's journey by rail had carried us into the very heart of the Highlands. Not only did the features of the landscape look different, but the very elements appeared to have undergone a change. The soft showers of the south and the moving mists of the hills had by this time resolved themselves into a furious rainfall, which seemed from its violence to partake of the wild character of this Highland wilderness. It was driven in squalls from the glens that opened on the west into this high, inhospitable region, and beat upon our railway carriage as if battling with our invasion of these mountain solitudes. The necessity of having to leave the shelter of the compartment gave us passengers no little anxiety, and perhaps more was felt than expressed.

When, however, with a score of other travellers, we alighted at Tyndrum, we were happily able to look at the comic side of the position, and I for one was conscious that a sketch of the assemblage of Scottish pleasure-seeking tourists, fighting their way in the pelting rain and wind to the hotel door where the Glencoe coach stood, would have made a good illustration for 'Punch.' The distance was only a few hundred

yards, but there was "water, water everywhere." It ran in streams about our feet, and while my one hand grasped the indispensable handbag, the other vainly sought to hold up an umbrella. It would have been some satisfaction had we been told then, as we were afterwards, that Tyndrum is one of the rainiest stations in all Scotland, its average rainfall being 104 inches. It was a question whether to start on a five hours' drive in this rain-storm, through a grand though dreary region, or wait for one more day—or maybe an indefinite number of days—in this solitary Tyndrum hotel, which was treeless, shelterless, and exposed to every blast. But as our coach places had been engaged and paid for, and as rooms were in readiness at Ballachulish, and others had been secured at Bridge of Roy, we decided to press onward, with a vague hope that in escaping from Tyndrum we might somehow escape from this deluge of rain. And as it proved, the result far exceeded our most sanguine expectations: when only a little way beyond Tyndrum the rain slackened, and by the time that we were five miles on the road it had all but ceased. Not, however, without anxious misgivings had we taken our seats, and there is no doubt that had we been aware of the extent of the uninhabited deer-tracts and shelterless wastes to be traversed that day, we would not with open eyes have made the venture in such weather.

The coach put one in mind of a lumbering old French diligence, and, in spite of looking spick and span from white and red paint, it felt altogether an uncanny vehicle, and gave one the impression of having a venerable frame. It was swung so curiously high that wooden steps were necessary to mount or dismount from the inside; and as its load



was piled on the top, it seemed with that shaky movement as if constructed to invite an overturn.

Onward we drove, through a bare, high country, until signs of habitation were sighted on the fir-clad shores of Loch Tulla. Then, with the irregular form of Loch Lydoch for some time in view, the road rose slowly over a dreary waste, passing on the left corries which cleft the hills noted for red-deer. A Highland lassie, to whom the guard had given a seat, and who for a few miles was our fellow-passenger, was pointing out Blackmount forest, one of the finest deer-corries in Scotland, when our attention was drawn to a herd of red-deer standing on the brow of the hill a mile or two to the right, their antlers visible against the sky, which by this time was fortunately clear. Long, however, before we reached the top of the hill, where the road is carried at an elevation of 1500 feet above the sea, they had disappeared among the interminable moors.

We asked our Highland maiden, whose cottage home seemed to have no neighbour within several miles, how far she lived from church.

“Nine miles.”

“Do you ever walk there and back?” we ventured to ask.

“Oh yes,—often in the summer, but never in the winter. The snow is too deep for us to venture far.”

“And what do you do with yourselves in the long winter evenings?”

“Oh, we spin and we knit, and we keep busy; and we speak the English sometimes, lest we should forget it altogether.”

She alighted without any aid while the coach was

in movement, and those who remember the high perch of that curious vehicle will understand what this implied.

After some miles through open and desolate moors, having, with the exception of two roadside inns, the resort of anglers, passed through a country scarcely inhabited, we entered the Pass of Glencoe.

Our first glimpse of this famous Pass, in an impending storm, gave us, as it were, the keynote to Ossian's poetry. He was born on the banks of the Cona, which is the stream flowing through the glen; and so much does his poetry abound in allusions to "the mists of Cona," to its sounding hills, and to the "clouds that rest upon Cona," to its eddying winds and roaring torrents, that he is often poetically termed "The Voice of Cona" or "The Bard of Cona." Yet the fact of all Ossian's poems being so much an utterance of the impression made on his mind and imagination by the scenery of Glencoe was not the point of interest that enchained our thoughts. The interest of Glencoe was one which, alas! cannot now even at this distance be approached calmly, as can, at any moment, a hazy survey of Ossian's poetry.

In Gaelic, Glencoe signifies the Glen of Weeping—a fit name, which none can hear without a thrill or without thoughts that involuntarily revert to the event which has stamped it with sadness unspeakable. In entering it, the rain, which had kept off for one bright hour, gathered again, and was swept by a wild gust up the glen: we could then see nothing but grand and shadowy forms of the dark hills on the left and the walls of precipice that guarded its entrance on the right. But the drenching storm

passed over, and the pale sunlight in the west struggling through the mass of drifting clouds threw its light on the rugged outlines of detached mountain masses that towered over the narrow Pass. Then the rills that like silver threads veined the perpendicularly steep rocks were at their base banked by tufts of tender green, which now caught the light, and looked in lovely contrast against the prevailing black purple of the cliffs. We were prepared for grandeur, but not for such beauty; and seen thus, in sudden storm and sunshine, the Pass of Glencoe was inconceivably grand. At one point it narrowed where the mountains on each side became more lofty and more gloomy; but the vapoury veil had been uplifted, and as we proceeded the white light, warming into a glorious sunset, burst through and dispelled the rain-clouds, touching the sharp peaks and line of crags in its golden glow.

The scene was weird and solemn, and as the road began to zigzag and wind down the glen we sat in silence. The sunset upon those black towering cliffs was worth a thousand miles of travel.

The rapid rate of descent roused us to attention. One could only marvel at the dexterity of the driver; and as the coach swung round the sharp angles, and the leaders kept their footing where it seemed they must inevitably run over each steep precipice, another feeling than that of awe and wonder held us silent for the time. The passage down the glen, which was only too short and rapid, will dwell in our memory.

The vestiges of the old village of Glencoe at the westward opening of the glen are still to be seen. Here, where its stream comes down in greater volume, among grass, a few trees, and other traces of cultiva-

tion, portions of the walls and foundations of the cottages yet remain. A fertile spot in the wilderness was this which was chosen by the ill-fated MacDonalds as their home—the wild glen behind, with its bare black walls of shelter, the bits of pasture and of field around the doors, and almost within sight of the green islet on Loch Leven, where the dead chiefs of the clan are still carried for burial. But treachery did its work too surely, and the once smiling village within reach of the lovely sea fiord stands silent and desolate and in ruins. It will always be the village of the murdered MacDonalds. Few cottars will build upon that site which has been dyed by the blood of the innocent people, and it will remain as a monument of perfidy, the bare recital of which makes one instinctively recoil. One of the most painful aspects of the tragedy is its nearness to our own times, since it was not enacted in what are called the dark ages, but only two centuries ago.

In 1691 a proclamation, exhorting the unruly Highlanders to swear allegiance to William and Mary, promised a free pardon to all who would take the oath on or before the 31st day of December, and who would undertake to live as peaceable subjects and neighbours. One by one the clans swore allegiance before the required date with the exception of MacIan, the old chief of the MacDonalds of Glencoe, who delayed taking the oath until the 31st of December, and who, when he repaired on that day with his principal vassals to Fort William for the purpose, was dismayed to find no official there competent to receive it. The nearest magistrate was at Inveraray, then not to be reached in less than a five days' journey; but the chief set out in this the depth of the Highland winter—not

even halting at his house, near which he had to pass—and only reaching Inveraray on the 6th of January. The sheriff urged that it was out of rule to receive any signature after the date fixed by the proclamation; but the veteran, with tears in his eyes, pled on behalf of his people, and prevailed. The oath was duly administered, and he returned with peace of mind to his mountain glen.

A certificate detailing the circumstances of MacIan's submission was sent on to the authorities in Edinburgh, and the intelligence soon reached London. But, alas! his delay in taking the oath had been eagerly seized by his enemies at Court, who had already decided upon his fate, and who, as is stated on undoubted authority, *suppressed the evidence.*

An order placed before William was signed by him, although it is asserted that he never read it. This fatal order, worded in rather vague terms, gave the royal sanction for the extirpation of the MacDonalds of Glencoe as "a set of thieves."

On the 1st of February 120 soldiers arrived in Glencoe on this mission in the guise of friends—MacIan's arch-enemy at Court having advised that the attack, to be successful, should be "sudden and secret."

Then succeeds a record of facts which, for treachery and cruelty, is without a parallel. The soldiers, officered by men whose names will be for ever execrated, were hospitably received by the unsuspecting inhabitants. During several days the best cheer that the glen could produce was spread before them, and we read that villagers and soldiers beguiled the winter evenings by friendly games at cards.

But at five in the morning of the 5th of February

1692, at the preconcerted moment, the signal was given, the butchery began, and the tale that follows is so piteous that it is not easy to tell. Among the first victims was the aged chief, roused from his sleep; of the 200 inhabitants sixty were slain. Under the sheltering darkness many effected their escape into the mountains; but it is said that the greater number perished in the snow, which lay deep at the time. Macaulay describes the terrible sufferings of the fugitives, and observes, "How many old men, how many women with babes in their arms, sank down and slept their last sleep in the snow?" In the district once entirely MacDonald, there are few now of the name.

But the first glimpse of the salt waters of Loch Leven, with the sight of its bright green shores and the far-off hills in the west, weaned us from the gloomy thoughts to which the glen and its tragic memories had given rise. Soon we found ourselves in the new Glencoe: unlike its prototype, and far from being a vale of tears, it is a populous, busy, and by no means picturesque village, inhabited chiefly by quarrymen who work at its extensive slate quarries. A marble quarry has also lately been opened, where a pretty, pale, pink-tinted marble, peculiarly banded like jasper, is worked.

How glad we were to reach before nightfall the comfortable hotel at Ballachulish! How welcome was the next day's Sunday rest there, and how refreshing the salt air off the sea! The hotel is beautifully situated, commanding views seaward across Loch Linnhe to the hills of Morven, and eastward over Loch Leven, with its wooded mountain shores, and the dark peaks of Glencoe in the background. Squalls and storms

were then forgotten, and the scenery was seen at its best—in cloudless sunshine.

But we had hardly eyes for the lovely scenery; one of us at least could only think of Glencoe. Throughout the length and breadth of the land there are to our mind no glens which, for picturesque beauty and pathetic interest, can compare with Glencoe.

## LOCHABER AND THE PARALLEL ROADS.

AMONG the remarkable effects resulting from the intense cold which, according to geologists, prevailed in Great Britain at a comparatively recent period may be instanced the famous "parallel roads" of Glen Roy and adjacent glens of Lochaber. Last summer the unusually fine weather tempted us to make a long-projected visit to this classic district of Inverness-shire, and on a bright autumn morning we stepped into the train for Stirling on our way to Glen Roy. Thence, instead of approaching it by the ordinary road from the east, by a few hours' drive from Kingussie or Dalwhinnie on the Highland Railway, we took the route by way of Tyndrum and through Glencoe to Loch Leven, not only for the sake of the beauty of the scenery, but also in order to familiarise ourselves with the wonderful exhibition of ice-action in the form of old moraines, erratic blocks, and *roches moutonnées* visible at every step on this route, and which prepared us for a better understanding of the exceptional effects due to the same causes in Lochaber.

On the evening of the 12th of August we arrived at Mr MacIntosh's comfortable inn at Bridge of Roy, well situated as a centre from which to explore the phenomena in Glen Roy and Glen Spean, through both of which the parallel roads extend. Here the



still snow-specked mountains on the south side of the Spean reminded us how insignificant were these white crevices on their summits compared with the mantle of perpetual snow and ice that enfolded the country in days primeval, and the evidences of which were visible upon every rock around us.

On the following morning we proceeded up the beautiful valley of the Spean, on both sides of which the lowest of the parallel roads is wonderfully well exhibited. But while charmed with the scenery, we were still more struck by the marvellous display of glaciated rocks and glacial *débris* underlying the fair surface of the country.

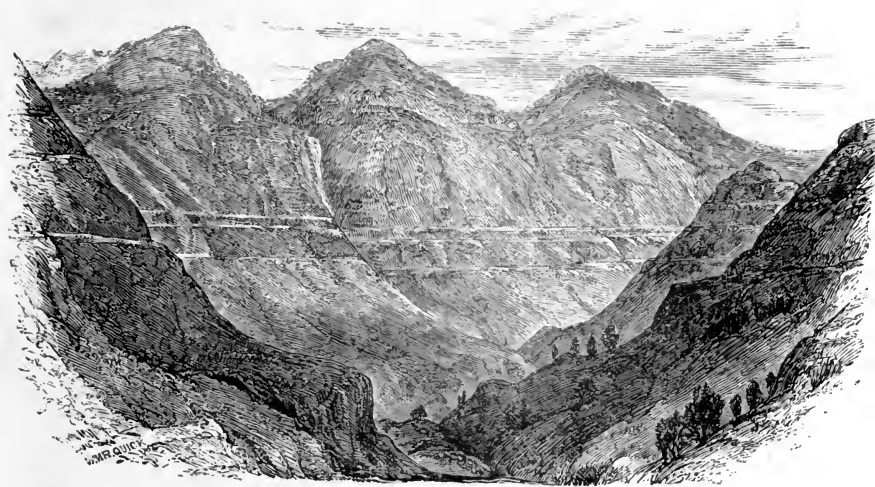
A few miles up Glen Spean to the right, in a glen joining at right angles, is the lonely Loch Treig, rarely visited except by the naturalist or sportsman. We were delighted with its wild beauty; but here again it was the extraordinary exhibition of glacial action which had rounded and polished the rocks to a height of 1280 feet above the surface of the loch, or more than 2000 feet above the level of the sea, that engrossed our interest. It was in this deep glen that accumulated the vast glacier which, according to geologists, issued into and spread over Glen Spean, so as not only to fill that glen, but also to ascend the hills on the opposite side, and then, turning westward, passed down to the Great Glen of the Caledonian Canal; while another branch of it was deflected eastward, and passed into and over Loch Laggan. The view of the blue waters of this loch was certainly fine, yet it is tame compared to its wild neighbour of Treig. Loch Laggan now discharges itself through Strath Spean into the sea on the west coast; but during the existence of the

great lake which filled the valley to the height of its parallel road its outflow was, like that of the lake of Glen Roy, eastward through the valley of the Spey to the shores of the German Ocean.

As we descended Glen Spean on our return to Roy Bridge, we needed no confirmation of the extraordinary old glacial conditions. Wherever we met with the bare surfaces of the rocks, they were worn and rounded by ice-action; and the striæ, graved by the old natural ice-tools, showed even the direction in which the gigantic glacier had moved. It was to this glacier that Mr Jamieson ascribes not only the blocking up of the entrance to Glen Roy, but, by its confluence with the Glen Arkaig glacier, the barring up of the valley of the Spean.

Early next day, with a cloudless sky, we had passed through the village of Bohuntine (where dogs seemed as numerous as householders), and were well on our way up Glen Roy, where the lines of parallel roads are best exhibited. But for those to whom this Highland valley is a *terra incognita*, it may be well to give a few words of description.

Glen Roy, in Gaelic *Gleann Ruadh*, or the Red Glen, is a long and rather narrow valley opening into the wide and beautiful Glen Spean: its deep ravine is the channel for the salmon-stream that bears its name, and though green and fertile in the very foreground at its entrance, it is elsewhere bare and barren. From Roy Bridge to the head of the glen the distance is about ten miles: its height above the sea at its entrance is 400 feet, and at its upper end 800 feet, while the mountains bounding it on either side rise abruptly to the height of from 2000 to 2500 feet.



VIEW OF GLEN ROY, WITH THE PARALLEL ROADS.



Intent on observing the peculiar features of the glen as they were gradually disclosed, we thought not of the narrow road which was carried along the slopes to its left side, and which, before we were half-way, skirted abrupt declivities without any parapet, winding in and out as it followed the sinuosities of the gravel terraces. There were also many dangerous bits where the clefts had been widened by recent rain, and where, in consequence, in the hollows, the width of the road—which had nothing to lose—had been sensibly diminished. But our eyes were riveted by the sight that presented itself, and which was altogether unique. Heath-covered from summit to base, and in a red glow from heath-bells in blossom, the steep mountains on either side were bare of trees, except where, down in the ravine of the river, a few were to be seen growing as if they were strangers in the land, and had a struggle for existence. Looking neither at the heather nor the hills, we looked only at the three “parallel roads,” for a glimpse of which we had travelled so far.

Stretching in lines as straight as if “drawn with a ruler and pen,” these grassy terraces or shelves are carried grandly round the contours of the steep slopes which bound the glen. Unlike any natural display of the kind to be seen elsewhere, it is the firmness of the lines and their faultless horizontality that are so remarkable. Perfectly “parallel to each other and to the horizon,” the level of each corresponds exactly with its counterpart, or rather its extension round on the opposite side of the glen.

The height of the highest road in Glen Roy has been ascertained to be 1155 feet above the sea, the middle road 1077 feet, and the lowest 862 feet; hence the

space between the upper and middle lines is less than that between the middle and lower—the former giving an interval of vertical height of 78 feet, and the latter of about 215 feet. Each of the roads measures from 50 to 60 feet in width, and inclines slightly to the centre of the valley. The relative distance is strictly maintained between each, and the parallel roads stand out, as far as the eye can reach, the prominent features of the Red Glen. They are rendered still more conspicuous by a slight change in the vegetation—their level surfaces giving rise to a greater growth of grass, with less of the wild gale mingling among the heather.

About half-way up the glen, and before passing Achavady, a solitary farmhouse, we climbed the side of Bohuntine Hill, whence one of the most comprehensive views is to be obtained. There was no shelter from the glare, and the pervading colour of the glen was almost dazzling. But the air freshened as we mounted higher, and we at last stood upon the col, or pass, from which we looked down Glen Collarig. From this height of 1000 feet we were able to scan the parallel ledges on the opposite side of the glen, girdling each flank and fitting into each recess and hollow; and involuntarily one began to speculate on the probabilities of the origin that local tradition had assigned to them, and which probably remained unquestioned for centuries until science interposed.

These *casan*—in Gaelic, literally “roads”—were evidently never made by the hand of man. The first tradition, however, was that they had been fashioned by Fingal and his mighty men; then again, that they had been made by the early Scottish kings for purposes of hunting during their residence at Inverlochy

Castle. But if heroes and kings ever used them as hunting-paths, they found the roads ready-made and defined in as strong relief on the mountain-sides as they are at the present day.

The carriage-road continued passable until within two or three miles of the head of the glen, where it is joined on the left by a side glen known as Glen Turret. Thence, climbing the hill in front, which is lined by the two upper parallel roads, we traversed the middle ledge, No. 3, and soon found ourselves standing on the upper ledge, No. 2, whence the prospect extended in one direction to the head of Glen Roy, and in the other for some miles downward; while to our right we had a fine view up to the head of Glen Turret. Here we noticed likewise how continuous the "roads" were, and that breaks only occur where the naked rock protrudes, shorn of its masking of gravel, or where breaches have been made by the descent of the hillside torrents.

From the head of Glen Turret a col conducts into another deep glen opening out into the Caledonian Canal. In this Glen Gluoy there is also another parallel road, equally well marked, but it is 17 feet higher than the uppermost in Glen Roy, and is generally known as No. 1. No traces of Nos. 2, 3, and 4 are met with in this glen.

From the point just named in the upper terrace of Glen Roy we enjoyed a perfectly level walk of a mile up Glen Turret, our heathery path being about 60 feet in width. Then the bare rock, coming to the surface of the "road" which we had followed so far, began to fade, and was not traceable farther on this side of the glen. Guided by sheep-tracks, we threaded our way down to the only cottage in this glen, on

the side of the stream which flows from the col separating Glen Gluoy from Glen Turret. But by this time the shadows had begun to lengthen, and we had to direct our steps to our vehicle, crossing rough hillocks of coarse gravel and sand—vestiges of the shoals and *débris* deposited in the old lake.

How glad we were now to quench our thirst from the linns by the way, and from the rills that trickled down every slope!—for, notwithstanding the northern latitude, the heat of the day had been suffocating, with scarcely a cloud visible. Oppressed by this heat, how much I was refreshed by the sweet scent of the wild gale which abounded among the heather! In this remote spot there was no inn where we could find food or shelter. We discovered, however, that our driver had coolly entered the stable of the solitary shooting lodge, and had there put up his horse. Not only was this liberty condoned, but when we were discovered, though strangers, we were kindly taken in, hospitably treated, and sent on our way refreshed.

It had been altogether a day of intense interest—one to be henceforward a landmark of memory.

As we drove back we could only wonder and ponder on the very different physical conditions that must have once existed, to leave such traces as were evident throughout the length and breadth of the glen. On thinking upon the theories advanced to account for the formation of the parallel roads, one felt compelled to dismiss the heroic origin already alluded to, which has long been fully disproved, and obliged to seek, in the several theories that of late years have been advanced by men of science, for a more probable solution of the problem.

It is now a doctrine of universal acceptance that the



parallel roads owe their existence to purely natural causes. But there is some difference of opinion among geologists as to whether they are shores of fresh-water lakes or beaches of marine origin. Numerous papers have been written on the subject, and a number of distinguished geologists have recorded their views at length.

The first who directed attention to the parallel roads was Pennant, in 1776, in the appendix to vol. iii. of his 'Tour in Scotland,' but he seemed inclined to accept the traditional theory of their artificial origin.

The next notice of them appears to have been in 1816, when a theory equally incredible was set forth, its author suggesting that they might have been aqueducts for artificial irrigation, similar to those in Valais, near Brieg.

In the following year, however, Dr MacCulloch, then (1817) President of the Geological Society of London, brought forward a paper in which he showed that the "roads" must in all probability have been margins of fresh-water lakes. Henceforward the hypothesis of their being lines of water-level was never called in question, and this important step in the argument has since been demonstrated almost to a certainty.

Sir Thomas Dick Lauder, the accomplished historian of the 'Morayshire Floods,' submitted a valuable series of observations to the Royal Society of Edinburgh in 1818, in which he came generally to the same conclusions as Dr MacCulloch. But the difficulty experienced by these two writers was to conceive what possible barrier could have closed up the mouth of the glens, so as to allow of the forma-

tion of the lakes, and in what manner the barriers could have been removed.

More recent writers tried to obviate this difficulty by suggesting a detrital barrier formed by the heap-  
ing up of *débris* by the sea as the land emerged after a first glacial period. It has been called the Detrital theory, and its able advocate, Mr Milne-Home, has supported his views in a series of three elaborate papers.

The objections raised to this theory led to the suggestion of another, termed the Marine theory. Admitting the parallel roads to have been formed by water action, it was contended that they were not lines of old lake level, but lines of old sea-beaches left when arms of the sea filled the glens, their successive levels resulting from movements of upheaval of the land when, to speak more clearly, the land stood at a lower level and the lakes formed straits. This Marine theory, originally brought forward, though since abandoned, by Darwin, has been strongly advocated by the late Dr Robert Chambers, also by Professors Rogers, Nicol, and others. But the opponents to it contend that, as the parallel road in Glen Roy known as No. 1 stands at an elevation of 1173 feet, or 18 feet higher than any "road" exhibited in the other Lochaber glens, the hypothesis of a marine origin is virtually disproved. Besides, they argue that if the sea filled Glen Roy, Glen Gluoy, Glen Glaster, and Glen Spean, it must have risen to the same level in the surrounding glens, whereas there is no evidence outside these Lochaber glens of any such parallel lines. The absence of marine shells is also another argument adduced against this theory.

The question was surrounded with these perplexities

when, in 1840, Agassiz, visiting the district, offered an entirely new solution. He had been studying for some years the glacial phenomena of Switzerland and the Alps, and detecting the similarity which existed between that region at the present time and what had once obtained in the glens of Lochaber, suggested that the parallel roads might have been formed by lakes dammed back by glaciers descending from Ben Nevis and the neighbouring mountains, during that reign of ice and snow which by geologists has been termed the Glacial Period.

It remained for Mr Jamieson, of Ellon, whose important paper, "On the Parallel Roads of Glen Roy," was published in 1863 in vol. xix. of the 'Quarterly Journal of the Geological Society,' to strengthen by new data, gleaned by careful investigation, the suggestion made by the philosophical mind of Louis Agassiz. And it is this glacial view of the Lake theory, as interpreted by Jamieson, that has received the most powerful support, and can claim as its advocates the largest number of distinguished scientific men, including Lyell, Geikie, Sir H. James, Tyndall, &c.

Thus we have: 1st. The Fresh-water Lake theory, with detrital barrier. 2nd. The Marine theory, with submergence. 3rd. The Fresh-water Lake theory, with ice barrier.

From evidence of old ice-action of the same nature as that which has been so frequently described in these pages, geologists have come to the conclusion that the whole of Scotland was once covered with ice and snow, as Greenland is at the present day. This Glacial theory, which was so startling at first sight, now meets with general assent.

According to the Scotch geologists, this intense cold was followed by a more temperate period, in which the ice and snow disappeared. This again, they consider, was succeeded by a second cold period of less intensity than the first, during which local glaciers descended from all the high mountain-ranges. It was at this latter period that Mr Jamieson places the formation of the lakes of Lochaber, and he describes how a great glacier descending from Glen Arkaig and traversing the Caledonian Valley would block up the mouth of Glen Gluoy and partly that of Glen Spean, whilst another great glacier, issuing from Loch Treig, crossed Glen Spean and blocked up Glen Glaster and also Glen Roy.

Sir Charles Lyell, adopting the general views of Mr Jamieson, makes the following remarks on the period at which the lakes were formed: "On the whole, therefore, I conclude that the Glen Roy terrace-lines and those of some neighbouring valleys were formed on the borders of glacier-lakes, in times long subsequent to the principal glaciation of Scotland."<sup>1</sup>

Before leaving the district we were desirous of examining the lower parallel road, No. 4, which is so well defined on each side of Glen Spean. Ascending from Achluachrach, about a couple of miles eastward of Roy Bridge, by a track carried up the side of Craig Dhu, and which merged in the natural "road," we continued our walk on it where it swept grandly round the mountain flank, and were thus enabled to look down upon Glen Glaster before we began the descent to the hamlet of Bohenie.

<sup>1</sup> *Antiquity of Man*, ed. 4, 1873, p. 312. Sir J. Prestwich, in an article "On the Origin of the Parallel Roads of Lochaber" (*Proc. Royal Society*, vol. xxix., 1879, p. 6), "assigns the Lochaber lakes to the close of the first period of great glaciation."

I was much struck in passing along this little-frequented track, which is a mountain pass between the glens, by cairns of stones similar to those we had seen standing in groups of three, four, or more elsewhere in this district, scattered at various points like landmarks in the distance. These cairns are raised to mark the spots where, in bringing the dead across the hills for burial, the bearers for rest deposit their burden. It was touching to come on some of these rude monuments, hoary and lichen-spotted, thus hallowing for ever the ground whereon the body of some dear one had been temporarily laid.

Our last excursion in Lochaber was to the lower part of Glen Spean—to Larig Leachan, one of the uninhabited glens opening on the south side of the Strath. To reach this we drove down to Spean Bridge, and crossing it and back two miles on the opposite bank, began the ascent by walking through the long heather to the lonely cottage called Achnafraschoille, which stands in the midst of a wild heath. Here, to save time, we fortunately found a guide—fortunately, because the rain, beginning to fall, blurred the outlines of the chain of dark hills, deeply scored as they were by wild corries and glens.

On and up we toiled with this “son of the soil,” through deep heather, starting coveys of grouse that rose with a whirr near our feet, when, after a long though gradual ascent in pouring rain, we found that, as usual, we were mounting over hillocks of heath-grown gravel, with here and there a large rock boulder, the now familiar evidences of old ice-action prominent at the entrance of all those side glens. Beyond these moraine heaps were rounded glaciated rocks at a height of 1500 feet. The portion of the lowest parallel road

reported to exist and to terminate here, was of course not to be recognised in rain dense enough to blot out the contours of the mountains.

The phases of the discussion are altogether so curious and so numerous—and we believe they are not yet ended—that we can only make this broad statement, and would refer our reader to study for himself the fascinating literature of the parallel roads, or, better still, counsel him to go and investigate the ground for himself.

III.

**GEOLOGICAL SKETCHES**





## THE FACE OF THE GLOBE.

### SHORT STUDIES IN PHYSIOGRAPHY.

AMONGST subjects of scientific study none is more fascinating, and there are few upon which a greater diversity of opinion still exists, than that part of physical geography and geology relating to the causes which have led to the present configuration of the earth ; or, in other words, the causes which have given rise to the great mountain chains, to the deep ocean beds, to the occurrence of lakes, and to the general disposition of land and water.

The land with its snowy alpine heights, its hills, and its valleys ; with its wooded plains, its arid deserts, its rounded downs or sharp escarpments ; with its active volcanoes and placid lakes and rapid rivers, presents a diversity of surface that delights the eye by its prospect, and the mind by the many subjects for inquiry which it affords.

The ocean basins, too, with their irregularity of contours and their profound depths, with their coral-reefs and clusters of islands, introduce features equalling in interest the picturesque lineaments of the land.

It is the office of physiography, a science lying midway between geology and geography, and partaking of the nature of both, to account for all these diversities

of surface, and to investigate the causes which have led to the present configuration of the globe.<sup>1</sup>

It must not be supposed that the globe which we inhabit was always as we now see it: we have to bear in mind that its surface has been modified during successive geological periods until it presents the form that it now has. We are naturally so much impressed by the beauty of the present surface of the earth, by the apparent immobility and permanence of the orders of animals and plants now living, as also by their complete possession of, and adaptation to, the existing surface, that we can hardly conceive that beneath an exterior so fully and admirably adorned there exist the wrecks and ruins of former surfaces of the earth, once probably as rich, teeming, and diversified as the one on which we move. The present terrestrial surface is, in fact, but a film over the solid frame of our planet: let life cease, and its whole organic structure would crumble down, leaving scarcely a trace behind. How difficult, then, it would be after the lapse of a few years to picture the beauty and variety of the present scene! And so it is now with respect to the past: entombed in the rocks and ground beneath us are the remains of former surfaces of this planet, but of the then existing plants and animals comparatively few traces are left. Their living forms have passed away, and all that remains of them are portions, too often fragmentary, of the harder skeleton, or a few leaf impressions and fragments of wood, preserved by chance and protected from decay in the sediment deposited in the beds of former seas and lakes—sediments now in part hardened

<sup>1</sup> [The term *Physiography* is now used to embrace a wider survey of Nature, not only of the earth in particular, but of the universe in general.]

into stone, and forming the solid rocks of our hills and valleys.<sup>1</sup>

Much as men of science may differ as to the kind and degree of the agents that have caused the wonderful changes it has undergone, there is one point which is clear, and upon which physicists and geologists are all pretty well agreed—namely, that the crust of the earth, if now rigid, must at one time have had great, and seems yet to retain some, flexibility.

The more prominent features of the surface are clearly due to upheavals, by subterranean agencies, at former periods of the earth's history. Others again are distinctly traceable to denudation or the wearing-down power of meteorological agencies still active—namely, to ice, snow, and rain, to heat and drought, to winds and tempests; others to earthquakes and volcanoes—in short, to the wear and tear of the elements, and, as it were, to the action of “Frost and Fire.”

Physicists and geologists, however, are still at issue on some of these questions, and even geologists among themselves assign very different values to the several agencies.

The hypothesis long accepted was that the earth was originally in a heated fluid state. Astronomers also had shown that the form of the earth, which is that of a flattened spheroid, was most compatible with the theory of the rotation of a fluid mass on its axis.

Fifty years ago the general belief of geologists was that our globe consisted of a molten nucleus covered by a thin solid crust some thirty miles thick. But physicists brought forward several objections to this theory of a molten nucleus with a thin crust, and

<sup>1</sup> See ‘The Ground Beneath Us,’ by Joseph Prestwich, 1857. Van Voorst.

contended for a more solid structure for our earth throughout.

William Hopkins was the first to propound the theory of a solid sphere. Reasoning on astronomical data furnished by the phenomena of precession and nutation, and calculating the effect which internal fluidity would have upon these phenomena, he arrived at the conclusion that the earth's crust could not have a thickness of less than eight hundred or a thousand miles; and to account for the extravasation of lava he supposed that there were in various places, at no great depth from the surface, lakes of fluid lava.

Sir William Thomson (now Lord Kelvin) endorsed this opinion, and in 1862, in his celebrated paper, "On the Secular Cooling of the Earth," expressed his belief that our earth passed from a fluid state into the condition of a globe solid throughout in a comparatively brief space of time, since which solidification he considered all geological events to have taken place.

Again in 1876 Sir William Thomson insisted in emphatic terms on the solidity of our earth throughout, allowing, however, that occasional cavities or spaces exist which are occupied by liquid lava. His investigations led him to the conclusion that our earth had a rigidity equal to that of glass or steel. And further, our great mathematician utterly rejected any and all geological theories which would assume the earth to consist of a shell of solid matter of any degree of thickness covering a fluid interior.

Geologists, however, assert that the conclusions arrived at mathematically by physicists do not always agree with the geological facts as seen by them; and, as the late Mr Hopkins observed, "Whatever hypothesis we adopt, we must ever recollect that the final test of

its truth must always be sought in the process of an accurate deduction of consequences resulting from our original assumptions, and a careful comparison of such calculated results with *observed phenomena*."

It is found, and in this all parties agree, that in descending beneath the surface, after passing the line of mean annual temperature, the heat increases with the depth in a ratio which, though not always regular, is constant as far as we have gone. So well known is this, that one difficulty with which our miners have to contend is the impossibility of going beyond a certain depth in consequence of the increasing heat of the rocks. In one of the deeper coal mines in this country, that of Rosebridge pit, at Wigan, which is 2445 feet deep, the temperature of the rock is 94° Fahr.; and 4000 feet was the limit of the depth to which the Royal Coal Commission of 1871, after giving the subject full consideration, and allowing for the effects of ventilation, believed that it would be practicable to work our coal mines.

The hot springs which rise to the surface in countries that are not volcanic, such as the hot mineral waters of Bath and the warm springs of Buxton, are supposed to owe their high temperature simply to the great depths from which they rise—finding an upward passage through some small fracture or fissure that exists far down below the surface. Hence, on the assumption that the heat of the earth goes on increasing to profound depths at the progressive rate of 1° Fahr. for every fifty to sixty feet of depth, which is the mean arrived at from a number of observations (and so far as we know there is no reason to believe that it materially varies), a point must be reached, at a depth of about thirty miles, when the

rocks would become fluid by intense heat. The point of fusion may, however, be affected by great pressure, a question which we shall consider afterwards.

Again, geologists urge that the flexibility of the crust—a flexibility retained until the latest geological periods—is only compatible with a soft and yielding substratum. The crumplings of the strata along lines of disturbance often show segments of the earth's surface compressed into three-quarters or to one-half of their original dimensions, so that a width of strata originally extending over twenty miles has been compressed and crumpled into fifteen or even ten miles. Take, for example, the Ardennes, which form a succession of squeezed strata about fifty miles wide that must, previous to compression, have occupied eighty or probably a hundred miles; or look at the contorted coal strata on the northern flanks of the Ardennes, which in Belgium are so wonderfully doubled over and over again upon themselves.

Take, again, the great mountain-chains of the globe, all of which are produced by the lateral pressure caused by contraction of a crust yielding freely to the deforming action. This compression and deformation have not only been in action in long-past geological times, but have been continued up to the very latest times. The Alps and the Himalayas, which are amongst the greatest of our mountain-chains, are also amongst the youngest, having been formed at a period, geologically speaking, little anterior to our own. Then, again, look at the great continental elevations continued to a still later period, and not even yet extinct. Thus, in Scandinavia and Arctic America, there are "raised beaches," with shells all of living species, at heights of 300,

400, and 500 feet above the level of the sea, extending over wide tracts; and in our own country there has clearly been a rise, at all events of some portion of England and Wales, since the glacial period.

Geologists maintain that the theory of a solid structure throughout is not only irreconcilable, but is perfectly impossible, with this extreme flexibility and other phenomena (which our limits will not allow us to notice), although they admit that the flexibility may be materially less in later geological periods than it was in the earlier ones. They further remark that volcanoes are not confined to one or a few areas, but are widely spread over the face of the globe, and that the composition of lava is so generally uniform that it is difficult not to suppose but that it is derived from one common substratum co-extensive with the crust itself; and they contend also that it is scarcely possible for lava to pass through any enormously thick crust, owing to the loss of heat which the lava would experience—a loss which would lead to its solidification in the volcanic ducts and to the extinction of the volcano.

We must, therefore, while admitting certain qualifications as indispensable, consider the theory of a quasi-fluid interior *versus* an entirely solid interior as still *sub judice*. Yet although physicists and geologists differ respecting the later stages of the earth's history, both agree as to its original fluidity at an early stage. Further, one school of geology makes common cause with the physicists in attributing greater energy to the forces in action in the earlier stages of the earth's history than that which prevails in our day. On this essential doctrine the camp of the geologists is divided against itself.

On looking into the state of opinion on this subject fifty years ago, we find that extreme views were then held with respect to the forces in action in former times. The infant science of geology was expounded almost exclusively by the disciples of the cataclysmic school, who explained all the great former physical changes by successive catastrophes. This theory, which involved sudden and violent changes, was supported throughout his long life by Elie de Beaumont, the distinguished French geologist, whose conclusions, somewhat modified, continue to be the geological creed of most Continental geologists, as distinct and opposed to that other school which has gradually become most popular in England.

Whilst Elie de Beaumont treated with great ability of the physical consequences of this cataclysmic theory, Alcide d'Orbigny considered it in relation to the life of the globe, and inculcated the doctrine that with each great catastrophe the life of the globe had been renewed. He accounted for the successive phases of life on the globe by the theory, now quite exploded, of new and distinct creations, and taught that the successive destruction of each world and all that lived and grew and flourished upon it was followed by entirely new creations.

In the mean time there arose the other theory, which counteracted the prevailing influence and contested many of the assumptions of the cataclysmic school. This Uniformitarian school was heralded by the writings of Hutton and Playfair, who advocated uniformity of action in past times as in present as sufficient to account for the actual features of the earth's surface. Their doctrines were expanded and promulgated by the fascinating and eloquent works



of Lyell in this country and of Constant Prévost in France, and were of great service in rectifying the extreme views which before then had prevailed. But it is a question whether this theory of uniform action—uniform, according to Lyell, in kind and degree—has not of late been carried too far. With few exceptions, it has become the accepted creed of the younger English geologists; but there is a feeling amongst many that it has been somewhat overstrained, and that while it has done admirable service in checking the more unphilosophical assumption of the cataclysmic school, it has had a tendency to hamper with foregone conclusions the freedom of research and to restrict the limits of inquiry.

But while the majority of English geologists have been led during the last fifty years to adopt the creed of Uniformitarianism, and while the followers of Lyell have probably carried it further than was ever meant by their teacher, the physicists have almost to a man sided with the small minority of geologists, and have never accepted the doctrine of uniform action in all time.

The observations of Sir W. Thomson on this head are clear and decided. He says that the doctrine of uniformity in geology, as held by many of the most eminent British geologists, assumes that the earth's surface and upper crust have been nearly as they are at present in temperature and other physical qualities during millions and millions of years. He shows that this is incompatible with the loss of heat which the earth has undergone throughout geological times, and concludes that no hypothesis "possessing the smallest vestige of probability can justify the supposition that the earth's upper crust has remained nearly as it is, while from the whole,

or from any part of the earth, so great a quantity of heat has been lost.”<sup>1</sup>

Let us now turn to the actual configuration of the surface, and see upon which hypothesis that configuration is best explained.

It is estimated that the proportion of the surface of the globe covered by water is to the land surface as 278 to 100, and that the average height of land or continents over the world above sea-level is somewhat less than 1000 feet. The great mountain-chains by which the continents are more or less traversed form mere narrow ridges, which rise in no case more than 29,000 feet, or to an altitude of about  $5\frac{1}{2}$  miles, and add but comparatively little to the mass of ground above the sea-level.

On the other hand, the contour lines of the oceanic basins tell a very different tale of the great submarine depressions. The soundings made on the recent voyage of the Challenger in the North Pacific Ocean have shown that its mean depth is not less than 15,000 feet, and that of the South Pacific about 12,000 feet, while the mean depth of the North Atlantic is found to be 14,000 feet, and of the South Atlantic 13,000 feet. It is only in high northern latitudes, in the North Atlantic and North Pacific, that the soundings give evidence of shallower seas—of a mean depth of about 8000 feet.

Thus it is extraordinary how small the mass of land projecting above the sea-level is, compared with the mass of waters filling the depressions below that level. Taking the average depth of the seas and ocean at 10,000 feet, and the height of the land as 1000 feet, the mass of the land above water compared with the

<sup>1</sup> [With reference to present views, see Sir Archibald Geikie's Address to the Geological Section of the British Association at Dover, 1899.]

mass of waters filling the ocean troughs is nearly in the proportion of 1 to 30.

It is curious that the deepest sounding recorded by the Challenger in the N.-W. Pacific registered a depth of about five miles and a quarter—a depth which closely corresponds with the elevation above sea-level of the loftiest known point of land—namely, the summit of Mount Everest, in the Himalayas, which is 29,002 feet, or very nearly  $5\frac{1}{2}$  miles. We must remember, however, that the one measurement is that of a mere peak, while the other probably gives the depth of an extended trough.

We may thus realise how irregular are the contour lines of the globe, and how deep the depressions and abysses concealed from our view by seas and oceans. Could all these waters be drained off from the surface, our earth would present the aspect of a solid sphere everywhere wrinkled and deeply pitted. Nevertheless, its actual dimensions are so great that mountains five miles high and ocean troughs five miles deep bear no greater relation to the bulk of the globe than the irregularities on the skin of an orange.

Turning to the dry land, we find mountain-chains in strong relief on the surface, all of them exhibiting the same general characters, as if due to one general cause. There is also a close identity in their features on one continent and those of the same class on another.

The same resemblance is maintained likewise among the rivers, plains, and table-lands of the world. We everywhere find characters in common, and all seemingly due to like conditions.

But there are other features more special, such as lakes, which, while so numerous in most northern

regions that they often form a network over the land, are rare and almost unknown in other regions. Then there are volcanoes, belting the coasts of some lands and breaking the solitudes of the great oceans, but marked by their absence in the interior of the great continents.

There are also the more peaceful features of coral islands and coral reefs raised in the deep warm oceans by the little coral polype, by whose secretions from the sea-water, reefs and entire islands—all formed by these minute animal organisms—are incessantly being built up.

Such are the materials and the structure of the face of the globe, and such are the more salient features affecting its crust.

It is indisputable that there ever have been deforming and wearing-down forces at work, constantly modifying the earth's crust—the one due to contraction and shrinking of the crust from internal causes which have produced elevations and depressions of the surface, and the other to the weathering and sculpturing of the surface by atmospheric agencies. We shall now briefly review the value attached to these several agencies during the *last fifty years*.

The dry land of the globe is of two kinds—the one consisting of sedimentary strata formed in the old seas during long geological times, and the other by masses of igneous rocks, either contemporaneous with the sedimentary rocks themselves, or else subsequently protruded through them. To those of our readers who are not geologists, it may be well to mention that it is clearly proved, from the presence of marine fossils in sedimentary strata, that all lands at some time or other have been under water, and that although the strata

are now disturbed and raised up into continental areas with their tilted mountain-ranges, all lands formed by sedimentary marine deposits must originally of necessity have been level and uniform.

Fifty years ago it was supposed that not only had all dry land been at one period or another successively under water, but that *vice versa* the beds of the great ocean had formerly from time to time been dry land—in short, that there had been frequent interchange of conditions between one and the other. But of late years this opinion has been questioned, especially by Dana and other American geologists, and there is a growing belief that continents, though frequently submerged, have not for a long geological period changed places with the deep ocean-beds—that although varying in form, continents have long occupied nearly the position that they now do, and that the subsidence of the land and the elevation of the sea-bed have only been over limited areas for limited time.

This new view finds support in the circumstance that many of the centres of the great continents consist of the fundamental [Archæan] crystalline rocks, round which successively wrap the Primary and Secondary and other newer sedimentary strata.

But the marine sediments constituting so large a portion of the continents show, at all events, that these lands have been beds of seas, and even of deep seas; and if beds of seas, some portions of the sea or ocean beds (varying from time to time in extent) have almost certainly been raised to balance the relative amount of water and dry land. It is evident also from the flora and fauna of islands of the Pacific and those of other seas that many of these islands must have been connected with the present continents by dry land, and

that the continents occupied part of the present ocean area. It is therefore a question how far the ocean troughs may have the antiquity assigned to them : we cannot help thinking that the older and more permanent depressions have been confined to very limited areas.

At the same time, if, as there is some reason to suppose, the ocean troughs are deeper now than in the earlier ages of the world, the seas then—while they were shallower—must have spread over a greater superficial area of the earth's crust ; so that, small in proportion as is the area of the land at the present day compared with that of the ocean, it must have been still smaller in early geological times. This would seem to account for the wide range of the old Silurian seas, when it is probable that only comparatively small and isolated portions of land were emerged above the waste of waters. It is not probable that the great ocean basins are areas of erosion and denudation, for the currents at great depths have not any erosive force, and the finer abyssal sediments have evidently been undisturbed for long ages. So, although the subject is beset with difficulties, we incline to the belief that in all probability the causes which have given rise to the raised and varied framework of the continents have produced also the great abysses of the oceans : the one may have originated in great anticlinal lines, or lines of upheaval, and the other in vast synclinal lines, or lines of depression—both being the necessary result of the slow secular refrigeration and contraction of the crust of the earth.

It is quite conceivable that, as with increasing age and constant loss of heat the earth has acquired increased rigidity, the great corrugations or wrinkles caused by the contraction of the crust at the later geological periods may have become more pronounced

and more permanent. It is quite conceivable, too, that some of the great troughs of the ocean, as in the case of some of the great mountain-chains of the land, may have been formed at various geological periods, and come down to the present day like the mountain-chains themselves—from Jurassic, from Cretaceous, or from Tertiary periods; although it may be doubted whether the form of the great ocean basins as they now exist can date far back into the Tertiary period.<sup>1</sup>

But we must not linger over these difficult speculations on the origin of ocean basins: let us turn to the more accessible surface features, and consider next the great mountain-chains of the world.

The interesting question of the origin and rise of mountain-chains has been made the subject of more especial investigation by French and by American than by English geologists. Nearly half a century ago the late Elie de Beaumont gave to the world the result of his researches, in his '*Système des Montagnes*,' in which he propounded a hypothesis that still receives very general acceptance on the Continent, but which, except in a modified view, has found few supporters in this country.

Assuming for our globe an outer solid crust with a central liquid mass, this distinguished geologist showed that the earth is incessantly losing some portion of its heat by radiation from the surface, and that this process of cooling, which has been going on at a slow rate from the earliest geological times, causes the central mass to contract and lessen in volume. This lessening of the heated nucleus has led the crust to be contorted in order to fit or adapt itself to the diminished volume

<sup>1</sup> [See also Address to the Geological Section of the British Association at Edinburgh, 1892, by Prof. Charles Lapworth.]

of the central nucleus, causing the rocks to wrinkle or fold in great corrugations or to fracture, and the fractured edges to squeeze up in lines of mountain-chains.

He showed that mountain-chains have been formed at all geological periods, and that their relative age could be ascertained by determining the age of the tilted mountain strata, and the age of those strata which abut horizontally against their base; for it is evident that the mountain-range must have been elevated before the deposition of the strata which lie horizontally at their base, and which are unaffected by the disturbances that threw up the mountains. It follows, therefore, that the mountain-chain is older than the horizontal strata and newer than the upheaved strata. Thus the age of any mountain-range is easily determined relatively to the successive groups of strata forming the sedimentary series.

Elie de Beaumont further argued that, as the crust of the earth must have become thicker by secular refrigeration, it follows that the crust was thinner and less strong at the earlier periods of the earth's history than at the later periods, and, consequently, that the crumplings and mountain-chains, although more frequent, were not on so large a scale in early geological times as when the crust had become thicker and more rigid.

But, although there is no doubt that some of the oldest mountains are very insignificant in height, we have no means of knowing what their original altitude was, or how much of their mass has been removed by wear and denudation. Some of the hills in the neighbourhood of St David's, in South Wales, are neither majestic nor lofty, yet they are amongst the earliest [remnants] of our mountain-ranges.



Or look, again, at a range of hills of much later date, yet still very old, as, for example, at the Mendips in our own country, and the Ardennes in Belgium, both portions of the same mountain-chain, raised before the formation of our Oolitic hills of Bath and Cheltenham, or of the Lias cliffs of Lyme Regis. It is possible that this range, which is now of comparative insignificance—in no case attaining a height of 2000 feet in either England or Belgium—formed at one time a lofty mountain-chain. For, judging from the portions that are wanting and have been removed from the Mendips, it has been estimated that those hills may at one time have had an elevation of not less than 6000 to 8000 feet above the plains of Somersetshire; while the Belgian geologists have shown that the Ardennes might have soared from 15,000 to 18,000 feet above the plains of Belgium. This chain, now so unimportant, may at one time have vied with the later-formed Alps and Apennines in height and grandeur. How strange and striking a picture our corner of Western Europe must have presented in that early age, when the English Channel was not, and when a great chain of mountains, possibly snow-capped, ranged from the Mendips to Westphalia! The portions which remain are, as it were, the worn-down stumps of this great mountain-chain, the whole of the vast superincumbent mass having been removed by wear and denudation continued through long geological times. And such has been the case in many other mountain regions of our globe—on the one hand deformation being produced by subterranean forces, and on the other planing down and levelling by meteorological agencies.

As we approach more recent geological times, we

find that the mountains of later date tower in much grander proportions above the surface. Thus, the snowy peaks of the Pyrenees had no existence before the Cretaceous period—that is to say, until after the deposition of our Chalk hills and downs, and therefore many long ages after the Somersetshire Mendips. The grand chain of the Alps had its rise still later, during a period closer upon our own times, long after the deposition of the argillaceous strata on which London stands, and after a great number of the existing forms of life had appeared. And it is supposed that the vast and towering chain of the Andes is, in great part, of yet more recent date.

These mountain-chains are in lines ranging in all directions, seemingly without plan or order, but Elie de Beaumont argued that, on his hypothesis, they are subject to order and symmetry; for he endeavoured to show that mountains of the same age have the same general direction, and that the direction of the chains has a definite order of relationship, and that between the several directions there is a definite geometrical symmetry: but this part of his great work has been strongly contested. He determined with considerable certainty the age and direction of twenty of the greater mountain-chains, and latterly he came round to the opinion that the process was often repeated on the same line of disturbance, and lasted through several geological periods. Whatever difference of opinion there may be as to the more intricate relations of the mountain-chains, his main propositions form a great mark in the theoretical geology of the last fifty years.

Another agent of great power, and one which has played a very important part in the configuration of the surface, is the wearing force of glaciers.

About fifty years ago Agassiz made the startling announcement that, at a late period of the earth's history, the greater part of Europe was covered with ice and snow. In our day glaciers are only of local occurrence, and are confined in our temperate climates to a few mountain-ranges, eroding and planing the rocks over which they pass, and leaving traces of their passage in lines grooved parallel with the flow of the glacier. This action is now limited to smoothen the rocks and to take off their sharp angles, reducing the angular surfaces and projections to smooth rounded surfaces, known as *roches moutonnées*.

But during the Glacial period, when, according to the theory of Agassiz, our earth passed through a phase of intense cold, it would appear that glaciers had a far wider spread, and, from their size and power, evidently produced results far exceeding anything we now witness. At that time glaciers of enormous proportions descended from all the chief mountain-ranges, deepening and eroding the valleys to such an extent in their passage to the plains that in the Alps the moraine *débris* carried down into the great valley of the Po has formed hills from 1000 to 1500 feet in height. Some geologists go so far as to ascribe all the valley-sculpturing of the Alps to this old ice-action.

The mountains of Scandinavia seem to have been one of the great centres of ice-action during the Glacial period. From their flanks vast glaciers descended, deepening the pre-existing valleys, and eroding the deep channels now forming the numerous fiords of the Norwegian coast. At one time these glaciers, like the existing glaciers on the coast of Greenland, ran out into the sea, where at intervals masses of

them floated off, forming icebergs, which carried the rocks of Scandinavia to the shores of Great Britain on one side, and on the other side over the plains of northern Europe. At another time in this period when the land stood higher, some geologists even affirm that the vast mass of ice accumulated on these Scandinavian mountains was not only propelled across to the Shetlands and adjacent islands, but also over the mainland of Scotland and the north of England, sculpturing the hills and valleys, and bringing out in relief many of the features of our own land. Other geologists, however, consider that the glaciation of each district proceeded from a number of local centres. That such centres did exist during one phase of the Glacial period in Wales, Cumberland, and Scotland, is undeniable.

It has been estimated that the great body of northern European ice was several thousand feet thick.

A similar mass seems to have traversed the plains and mountains of North America. The great tract of land extending to the Rocky Mountains bears in places all the marks of glacier erosion, and this even up to the height of 5000 feet. The American geologists show that the ice has passed straight over all inequalities below this level, and thence infer that this great northern ice-cap must in America have had a thickness of not less than 5000 to 6000 feet.

The phenomena are so general in the northern hemisphere, and their consequences so important, that this glacial theory must be considered as one of the most valuable and positive acquisitions made to geological science during the last fifty years. Unlike some of the other hypotheses advanced during the same period, this glacial theory meets with almost

universal acceptance. It explains much which before was unintelligible and perplexing to geologists, who in their endeavours to find a cause for the presence of far-travelled blocks or boulders over these ice-worn surfaces, had resorted to the hypothesis of great "waves of translation," and to frequent diluvial action.

The aspect that Great Britain presented during that icy reign must have been weird and desolate in the extreme, and not unlike the snowy, frozen picture that Greenland exhibits in the present day.

In connection with the glacial theory is another most interesting problem—namely, the origin and distribution of lakes.

Fifty years ago the received theory was that lakes owed their existence to depressions on the surface, or to the damming back by various causes of running water. But with the progress of the glacial theory, certain lake-basins have been referred to the excavating power of great bodies of ice. Many geologists, however, dissent from this view, and although it is now a popular doctrine in England, there is still, as in the case of Uniformitarianism, a powerful minority opposed to it.

The advocates of the glacier-erosion theory point to the circumstance that lakes are most common in northern latitudes which have been subject to glacier or ice action, that the slopes or sides of the lakes even below the surface of the water are often highly glaciated, and that land-ice has passed straight up and over high hills. They assert that the deep narrow lakes which intersect the southern slopes of the Alps have been ploughed out and eroded by the action of glaciers on their descent from these mountains, and they

account for the large quantity of *débris* or moraine matter at the mouths of the valleys into which lakes open as having been excavated and ejected from the valleys and lake-basins, whereas their opponents consider it really as the scour of the valley only.<sup>1</sup>

The glacier-erosion hypothesis was most ably discussed by the late Dr Hugh Falconer, who during twelve years' wanderings about the Himalayas, and in Cashmere and in Thibet, had rare opportunities for investigating the features of lakes and mountains on a scale far surpassing those of Europe, and who, after his return from the East, made repeated visits to the Italian lakes in order to compare the features of the Alps in this respect with those of the Himalayas. He came to the conclusion that the glacier-erosion theory of lakes was altogether untenable, and argued that the Italian lakes owed their existence to great fissures or depressions formed during the last upheaval of the Alps. These formed lakes with rivers running through them, and before there was time for them to be filled up with silt the Glacial period set in and filled them with a compact body of ice, over which the glaciers with their moraine matter glided, as over an icy bridge, into the distant plain. Dr Falconer insisted that precisely the same "primary conditions occurred in the great valleys of the Himalayas, but without the same glacial phenomena," or rather without the same extension downwards of the glaciers; whence "the difference of the two cases was, that whereas the ice filled up the lake-basins in the Alps, constituting as it were the conservative means by which those basins were saved

<sup>1</sup> [The views of the advocates of the glacier-erosion of lake-basins are well expressed by A. R. Wallace, 'Fortnightly Review,' November and December 1893.]

from being silted up by alluvial and other matters, in the Himalaya Mountains this conservative action did not take place, and the lake-basins remaining open got filled." Instead of being filled up by ice "which afterwards melted into water, these lake-basins were gradually silted up by enormous boulders, gravel, and alluvium of every kind, which were transported down from the Himalaya Mountains in prodigious quantities by the torrential action of the periodical rains."

Further, Dr Falconer expressed his opinion that the Italian lakes offer independent difficulties to the glacier-erosion hypothesis. He contended that the action of glaciers is limited to superficial erosion, to planing and polishing, and is incapable of excavating these fissure-like troughs in which the great Italian lakes lie. He cited the steepness of the slopes, the vast depths of their basins, and their constant form in long, irregular, narrow channels. Lago Maggiore, for example, is 52 miles long and  $3\frac{1}{2}$  to 4 miles wide, and Como 40 miles long with a width of about 3 miles. Further, he laid stress upon their depth, that of Maggiore being 2605 feet deep, or 1927 feet below the level of the Mediterranean, and he argued that it was physically impossible for a glacier to plough down to such a depth, and then to rise again and move up and excavate against an incline of about 180 feet per mile.

Dr Falconer also pointed to the valley of the Jordan, which is one of the most remarkable lines of depression on the face of the earth, and demonstrated that it could never have been excavated by glaciers. In its long narrow channel the Jordan plunges through a succession of lakes or troughs with a fall so rapid that its course has been described by this observer as nearly that of a continued cataract. He dwells on its remarkable

feature, "the sultry chasm" of the Dead Sea, the surface of which is 1292 feet below that of the Mediterranean, while the depression of the bottom has been ascertained to be 2446 feet below that level, and reiterates his conviction that erosion by ice or water could never excavate a sudden, irregular, and precipitous "chasm" like this.

The opponents of the glacier-erosion hypothesis further assert that the fact of lakes being chiefly a feature of mountainous regions is readily to be accounted for in the circumstance that the lakes have had their first origin in those synclinal lines of depression which, in the crumpling of the earth's crust, formed, as it were, the counterpart to the anticlinal lines of elevation.<sup>1</sup>

The advocates of the glacier-erosion theory necessarily make an exception of the vast lakes of Central Africa, where glaciers are unknown. In their case, as in many others, we are therefore obliged to revert to the old theory, and assign their origin to depressions of the surface, or to transverse depressions in the lake valleys themselves.

There remains yet another factor in earth-sculpture, more potent than cold and more permanent than glacial epochs. This is the slow and incessant wear and waste caused by atmospheric agents. To these agents we have already made a general allusion, but we will now endeavour to give the reader some estimates of the importance of rain and rivers in levelling the hills and deepening the valleys. These agents, like the dew, may be almost impalpable, yet every particle tells with effect: each raindrop has its mission and plays its

<sup>1</sup> [See also paper by J. E. Marr, F.R.S., on "The Tarns of Lakeland," *Quart. Journ. Geol. Soc.*, vol. li., 1895, p. 35; and vol. lii. p. 12.]



allotted part in the disintegration of the rocks and in the removal of matter. Thus all the rainfall on the surface, with the exception of one portion which is evaporated, and of another portion which is taken up by vegetation, finds its way in the form of streams and rivers to the sea. These streams and rivers in their passage to the sea carry down with them, every day and hour, material from the lands over which they flow. After heavy rains or in floods all must have noticed the turbid state of river waters. This turbidity, which is due to the clay and sand washed off the area of land drained by the rivers, is carried down in suspension mechanically to the sea.

In this way every river of importance discharges with its waters a quantity of silt which is dispersed over the adjacent sea-bed, where it helps to form the shoals and sandbanks so common at the mouths of rivers. To this action the great deltas of the world are also due, so that as a matter of fact their rate of growth is a certain measure of the loss of the land. Professor [now Sir Archibald] Geikie, after giving the quantity of sediment carried down annually by six of the great rivers of the world, proceeds to estimate the time it would take to lower the area of drainage by one foot. He considers that the Mississippi effects this in 6000 years, and the Po does the same work in 729 years, the average time for the six rivers being 3154 years.

But besides the solid material carried down mechanically or in suspension, the rivers carry down almost as much mineral matter in a state of solution, or invisibly. In looking into the clear depths of a swift-flowing stream—clear enough for us to count the pebbles on its bed—we would never suspect that these same sparkling, pellucid waters are charged with solid

material in a state of solution, and therefore invisible to the eye.

Thus every day in the year, whether the river be clear or muddy, each gallon of water carried down by the Thames contains 19 grains of dissolved inorganic or mineral matter, removed from the hills. And this is quite distinct from the sediment swept down in floods from the surface. Thus our chalk and other limestone hills, hard and compact as they are, give up a portion of their substance to all the rain-water which passes into them and is afterwards given off again as springs. All limestone hills consist, in fact, of a material which, to a considerable extent, is soluble, and which, when dissolved, shows no more than a lump of sugar in a tumbler of water.

This gradual destruction of the surface through the agency of rain has gone on through countless ages, and silently and ceaselessly it goes on still. But the formative process through the accumulation of sediment has kept pace with the destructive agent, so that although there is the almost insensible yet powerful planing-down agent in action around us on every side, we know that the material worn off the surface is applied, in the marvellous economy of nature, to the reconstruction in the depths of the seas of the rocks of the future, which in some distant age may be raised to the surface and be eroded in their turn. If denudation had gone on in past times without any corrective process, the land, after the lapse of ages untold, would have been so planed down as to have its level permanently lowered and its inequalities effaced. But throughout all time, as we have before pointed out, there have been movements of elevation of the solid crust which have raised large continental tracts and thrown up mountains:

thus have the ever-varied and picturesque features of the surface of the globe been renewed and maintained.

Before concluding we would draw attention to one wonderful reconstructive agent, to which the narrow limits of our space only allow the briefest allusion.

We have already mentioned how all rivers carry down in solution the substance of our limestone hills into the sea. This is not precipitated like the sediments brought down mechanically, but is separated from the water chiefly by living organisms for the purposes of growth and life. Thus the mollusca separate the lime for their shells and the fish for their bony skeletons; but what concerns us more especially is the marvellous result accomplished by the little coral polype in extracting from the sea-water the lime which is necessary for the construction of its cells. To the incessant agency of myriads of these minute polypes living on a common framework are due the great coral reefs and coral islands of tropical seas—these islands after a time often becoming so consolidated as to form a limestone as compact and solid as that of our own limestone hills, many of which, geologists tell us, have the same origin.

Of the way in which this wonderful transformation is effected we cannot do better than quote the eloquent and forcible words of Dana, who remarks, in speaking of the soluble matter carried down from the land into the sea, and its reconstruction by the coral polype, “that we may have in these coral reefs the substance of the rocks from the snow-covered summits of the Himalayas, the limestones of the burning plains of India, or the strata of inaccessible China, removed from their respective districts in imperceptible atoms into the great common receptacle—the ocean—where,

after circulating over thousands of miles and for unknown time, it is brought to light and rendered tangible again by the incessant labours of millions of minute living gelatinous bodies, and by these insignificant organisms it is built up again into masses almost rivaling the originals in dimension and importance, but losing in this, its new dress, all traces of its diverse origin and diverse age, and while reappearing in strata, may be as solid as the older rocks, nevertheless amongst the newest of the deposits forming the land of the globe."

In this short essay we have reviewed a few of the geological theories that have influenced scientific thought during the last fifty years. We have touched briefly upon some of the great questions of terrestrial physics, upon the origin of mountain-chains, of continental areas, of lakes and coral islands, and upon glaciers and other agents of earth-sculpture. We have attempted to show that some of the theories, howsoever ably argued and complete from one point of view, fail to satisfy all the conditions of the problems; and we cannot also help thinking that the consequences of the hypotheses advanced from time to time seem too often lost sight of. May it not therefore be a question whether, in another half century, some of the views relating to those great phsyiographical and geological questions which seem to receive such general acceptance in the present day will not have taken a direction very different from that to which the popular belief is now so strongly guiding them?

"Our little systems have their day;  
They have their day and cease to be;  
They are but broken lights of Thee,  
And Thou, O Lord, art more than they."

## CHANNEL TUNNELS AND CHANNEL BRIDGES.

GEOLOGISTS tell us that at a period which they term "Recent," though at one too remote to be measured by our chronology, England formed part of the Continent, and was joined to France by a continuity of land. There were then no Straits of Dover; the island of Great Britain as such had no existence, but was a sea-board of Western Europe, holding, in a more northerly position, the same relation to the mainland as the Spain and Portugal of the present day. It is clear even to an uneducated eye that the high Chalk cliffs on the French side between Calais and Wissant are counterparts of the longer range of Kentish cliffs on the English side—that they are, in short, portions of one formation which formerly spread across the Straits and united the two countries. Nor does the resemblance stop here: we are told that this similarity extends to the underlying strata—namely, the Gault and Greensands, the Wealden strata and their diminished equivalent on the French side, and the Kimmeridge Clay and the Oolites, which only come to the surface farther westward. The Channel passage has been gradually eroded or excavated through these various strata until it has assumed its actual proportions, insulating England and constituting a wide and

impassable barrier to a highway between her and the nations to the eastward. And it is a passage which, though very slowly, is yet steadily enlarging. The same forces are at work; the same, or rather a greater, volume of water is denuding and cutting back, inch by inch, year by year, the sea-wall of Chalk on the Dover shore, and likewise that on the opposite coast of France.

Long before the adaptation of steam, the possibility of reaching the shores of England by some less uncertain route than by navigation of this Channel was a problem that occupied many minds—a problem that, up to the present time, has been practically solved by none. The first novel attempt on record with which we are acquainted was made towards the end of last century, when M. J. P. Blanchard and Dr Jeffries ascended from Dover in a fire-balloon, and alighted on the French coast at Guines, a few miles inland from Calais. The success which attended this venture incited M. Pilâtre des Rosiers and M. Romain to imitate their example, and a few months later—on the 15th of June 1785—they made the ascent from Boulogne with a view to crossing the Channel. At a height of 3600 feet the balloon caught fire, and the ill-fated aeronauts fell lifeless to the ground. An obelisk in the village churchyard of Wimille, on the highroad between Boulogne and Calais, marks the spot, and stands not far from the very region where some day or other a submarine tunnel may possibly rise to the surface.

Our French neighbours, ever ready to grasp at a brilliant idea, seem to have taken the initiative in the bold scheme for constructing a highway between France and England. In 1802 M. Mathieu submitted

a plan to the First Consul, in which he proposed to construct a submarine tunnel from Calais to Dover, formed of a double row of superimposed arches—the lower archway to serve as a subway for drainage, and the upper arch to be paved with a substantial roadway, lighted by long lines of oil-lamps, and traversed by diligences with relays of horses. This tunnel was to be ventilated by means of chimneys formed by iron tubes coming up in mid-channel.

We can well understand how Napoleon would have welcomed the realisation of such a dream, as year after year he waited, only to learn that that day would never dawn when it would be possible for his flotilla to leave its anchorage in Boulogne Harbour and force a passage to England through our watchful fleet. The idea once started gave birth to several schemes, which, owing to their impracticability, were never known to the many, and have slipped into oblivion. It may interest the curious reader if we mention a few of the most noteworthy.

Amongst the earliest plans brought forward was that suggested by Dr Payerne for a colossal bridge to span the Straits, raised on masses of concrete. Another emanated from MM. Franchot and Tessié, who started the original idea of a roadway laid from coast to coast across the bed of the Channel in a cast-iron tube.

But these and others were eclipsed by the originality of the series of projects propounded by the late M. Thomé de Gamond, which were more remarkable for boldness than for their practicability. As a young engineer, his professional duties had made him well acquainted with the hydrography of the Channel. Unlike most projectors, this enthusiastic explorer was often the first to see the difficulties of his own designs.

and to withdraw them successively in favour of fresh schemes, for the suggestion of which he showed singular aptitude. His many efforts for the cause in which he took so keen an interest we think it well to record here.

Doubtless many of the travellers who cross from Paris to London, and who suffer all the miseries of a rough passage, look upon the Channel as a fathomless abyss. But the fact is, that if St Paul's Cathedral were placed in the deepest part of the Channel, the whole of the dome would stand above water. For in its deepest parts the depth of the sea does not exceed 188 feet, and for a long distance from shore it does not exceed a depth of 50 feet, while for two miles outside the Calais coast the soundings are only in about 20 feet of water.

M. Thomé de Gamond's first proposition, in 1834, was that of an iron tube lined with masonry, laid at the bottom of the Strait. For this purpose he pointed out that it would be necessary to level the bed of the sea at depths varying from about 60 feet to 186 feet, which, he justly observed, was not an easy operation. For the execution of this plan he estimated that a sum of at least £18,400,000 would be required. This was a high price for a rather venturesome work, and it found no supporters.

In 1836 he next tried how a bridge could be carried across the Straits between Cape Blancnez and the South Foreland. His ideas on this subject were of surpassing magnitude. We may give the reader some notion of this by mentioning that to admit of the passage of ships the arches of his bridge were to rise 171 feet above the sea, so that in the deepest parts of the Channel the height of the arches from sea-bed to keystone would be at least 378 feet, or higher than St



Paul's Cathedral. Its cost was to be in proportion, amounting in all to £160,000,000.

Then in 1837 came the project of a gigantic ferry between the South Foreland and Cape Blancnez. To shorten the distance two stone piers, each about five miles long, were to be thrown out from each shore, leaving an interval between their two ends of eleven and a half miles. Two spacious harbours formed at the extremities of the two piers were to receive the ferry-boat intended to make the passage. The estimated expense of this scheme amounted only to £9,200,000.

There was still, however, one other scheme, which occurred to him in 1840—viz., that of rejoining England to the Continent by means of a continuous isthmus of stonework, leaving three navigable channels which were to be passed over by movable bridges. But he mentions several formidable objections which were raised to this isthmus, one of which “consisted in the obstinate resistance of mariners, who objected to be obliged to work their ships through the narrow channels left by this work,” and another being the estimated cost, which amounted to £33,600,000.

Feeling the difficulties of all these schemes, M. Thomé de Gamond next turned his attention to the underground structure of the Channel with the view to a tunnel, and for that purpose made a fresh geological survey of both coasts. After making himself acquainted with the superposition of the strata in the Boulonnais and opposite English shore, he next sought to determine their range under the Channel. After tracing by means of the dredge the Portland beds from Cape Grisnez to the Varne Shoal—a reef in mid-channel, the summit of which lies only 3 feet under low-water level

—he proceeded to ascertain the character of the ground between the Varne and the neighbourhood of Folkestone. The sounding-line and lance had brought up in depths of 98 feet traces of a clay the geological nature of which he wished to determine with precision. For this purpose larger specimens were required, and to obtain these he made a series of descents to the bed of the Channel.

The quaint account of his safety equipment for diving in water from sixteen to eighteen fathoms deep is given in detail. Weighted with 180 lb. of flint and wearing an air-belt of bladders, a stout safety-line was attached to his girdle, and another to his left arm as an alarm signal. A knife hung from the intrepid explorer's left hand and a spatula from his right, the former to cut away the flint-bags after a specimen of the clay had been secured and pocketed in the receptacle which hung in front of his girdle. His ears were plugged and covered over with oiled lint, and a wadded cotton cap was worn over this. At the last moment he filled his mouth with olive-oil, having, like the sponge-divers of the Mediterranean, previously fortified himself by a cup of *café noir*.

He thus made the descent successfully three times in one day, extending his observations over two-thirds of a mile. "In fact, hardly had I reached the ground, on which my bags of stone fell with a shock for which I was prepared, than to drive my spatula into the clay, to dig up a piece, to seize it, to throw it into my pocket, then to cut the strings which tied the ballast to my legs and leave all, was the affair of a very brief moment, which I was careful not to prolong." His record of the appearance of the sea at depths is not without interest.

In these rapid descents I could only cast a very furtive glance over the bed of the sea, which was in this place quite dark when the sun was obscured. This darkness arose from the very deep colour of the ground in that region. But when the sun shone—and this was the case during my first two descents—the liquid medium assumed a rather milky appearance, transparent enough, and one could very well distinguish the remains of white shells, with which the dark bed of the sea seemed to be strewn. I even saw spotted bodies pass with a rapid movement, and these I judged to be shoals of flat fish of the sole or skate family, disturbed by my presence.

It was on ascending from my third and last visit to the bed of the sea that I was attacked by some carnivorous fish, which seized me by the legs and arms. One of them bit me on the chin, and would at the same time have attacked my throat, if it had not been preserved by a thick handkerchief. I rid myself promptly of this one, which caused me sharp pain, and which left me as soon as my hand touched it. I thought myself lost. However, preserved more by an instinctive energy than an act of volition, I was fortunate enough not to open my mouth, and I reappeared on the top of the water after being immersed fifty-two seconds. My men saw one of the monsters which had assailed me, and which did not leave me until I reached the surface. They were conger-eels.

Without loss of time the half-drowned diver was hauled into the vessel, exulting in the discovery that the specimen of clay brought up in his pocket from the bed of the Channel was "Weald Clay identical with that which I had known in England on the low plains of Kent bordering the Straits." Thus his determined exertions were at last rewarded.

The scheme which he brought forward in 1856, and which resulted from these observations, was that for a submarine tunnel from Eastwear Bay, near Folkestone, to Cape Grisnez, with a central station at the Varne, above water-level. Without reference to the highly

permeable character of the Great Oolite, the tunnel was to be begun in that formation near Marquise, and then to be driven boldly through the Oxford Clay, Coral Rag, Kimmeridge Clay, and the Portland Stone and Sands under the Channel; then to traverse the Weald Clay, and finally the water-charged Lower Greensand, rising through the Gault to the Chalk on the English coast. Its cost was computed in figures showing a total of £6,800,000; but estimates in such a case are unimportant, for at no cost could a tunnel have been driven, as he intended, under the sea, through such formations as the Oolites, Portland Sand, and Lower Greensand. It might as well be attempted to drive one through the Goodwin Sands as through the last, which at Folkestone are not less than 200 to 300 feet thick, and consist almost entirely of soft loose sands.

Probably few of the many passengers who cross from Folkestone to Boulogne are aware that about mid-channel they pass so near to the dangerous reef of the Varne, the summit of which is only marked by a floating light. This reef is composed of sand, with large blocks of Portland sandstone. M. Thomé de Gamond's favourite design was to raise an international railway station on this submarine island, which, he urged, could be done at a trifling expense. According to this plan, the Varne was to form a large harbour of refuge, to be furnished with a lighthouse, to have outside quays, besides a large inner port for shipping; and travellers, who he supposed would embark here for all parts of the world, were to be carried up from the line of railway to the surface platform by a lift. (See Plate, Fig. 2.)

The whole description of this "Varne Star" harbour reads like the chapter of a romance, and reminds one of the tales in the 'Arabian Nights.' Despite the adverse

views of irate and perplexed seamen, we can sympathise with its author in speaking of his fanciful creation as a "splendid idea"; and we can excuse him for waxing eloquent, and wording its description in glowing, if not poetic, phrase. Its quays, stretching out into the sea, were to be thronged with shipping from many countries, unloading or loading freights brought by the tunnel from all parts of Europe; its beacon-light was to stand out as a guide to mariners in calm, and point the way to a haven of refuge in stress of weather. In short, the "Varne Star" was to be a perfect focus of international industry and of safety.

The same designs, considerably altered and modified, were exhibited by their author at the Universal Exhibition in Paris of 1867, in the hope of enlisting the interest of the public, who, however, were not to be moved by his attractive diagrams.

Meanwhile, although fewer plans had emanated from the English side, our great engineers had not been idle. Brunel had already proved the practicability of constructing a tunnel under water, amid circumstances of extreme difficulty, although it was only after many years of cost and toil that the Thames Tunnel was opened in 1843. It was carried through porous strata, the crown of it in some parts being only a few feet from the bed of the river, with a depth of 50 feet of water above a large portion. The Tower Subway is a better instance, for, having been driven in London Clay, its execution proved easy and rapid.

It must be borne in mind that although two centuries ago the identity of the Chalk on the opposite coasts was noted and commented upon, it is only of late years that we have acquired sufficient geological knowledge of the strata on both coasts to enable us to speculate

on what may possibly be their range and thickness under the bed of the Channel. The advance of geological science has now not only demonstrated the nature of the strata on both coasts, but likewise clearly indicated their extension under the Channel, as well as their probable depth and thickness.

Looking at all these conditions, and after a careful consideration of the subject, our English engineers came to the conclusion that the Chalk formation presents the greatest facilities and the best chances for the construction of a tunnel. This view also found support among many French engineers, and a deputation waited on the late Emperor of the French, whose policy it was to encourage works of public utility. He evinced much interest in the details of the project, and desired that a committee of French and English engineers should be formed for its furtherance.

Amongst those who took a prominent part in this inquiry were Mr W. Low and Sir John Hawkshaw. The last-named eminent engineer had borings made in 1866 at St Margaret's Bay, near Dover, and at Sangatte, near Calais. The results of these borings proved that at St Margaret's the Chalk beneath the shore had a depth of 545 feet, of which the lower 295 feet consist of grey Chalk or Chalk Marl; and at Sangatte the borehole reached a depth of 551 feet without traversing the Chalk, the lower 284 feet being in the same grey Chalk or Chalk Marl. At the same time he instituted a systematic inspection of the Channel floor. A steamer was fitted out for the purpose, with special apparatus to bring up specimens from the bed of the Straits at intervals, the result of which was to show that the Chalk was continuous between the two localities. (See Plate, Fig. 1.)

Following up these researches, Sir John Hawkshaw, in association with Mr Brunlees, formed a plan for a Channel tunnel through the Lower or Grey Chalk, which in this area is extremely argillaceous and compact. In order, however, to guard against the risks arising from any possible faults or fissures, it was decided to carry the tunnel at such a depth that at least 200 feet of strata should intervene between the bed of the Channel and the crown of the tunnel.

The reader who is desirous of fuller particulars concerning this plan will find them in a paper by Mr W. Hawes, read before the Society of Arts on 18th March 1874. In this paper Mr Hawes informs us that it is first of all proposed to make shafts and carry preliminary driftways, on a small scale, to such a distance under the sea as would decide the practicability of the enterprise on a larger scale. These preliminary works he estimates at £160,000, and he observes that the estimate for the tunnel itself is 10 millions. On this point we cannot do better than quote the remarks made by Sir J. Hawkshaw in discussing Mr Hawes's paper:—

With regard to this project, it might be well to state that the cost, which had been put at 10 millions, for the construction of the railway beneath the Channel, though it appeared a large sum, really embraced about 10 miles of railway on each side. In order to get to the tunnel, the railway would have to be commenced in the town of Dover, where a very large station would have to be made, and run from point to point along the coast till it turned down near the South Foreland. When it emerged on the other side on the French coast, several miles of railway would also have to be made, to join it with the Northern of France line, so as to be able to get to Paris and Belgium. In fact, the capital of 10 millions would be for about 31 miles of railway in all. That would make the railway cost £300,000

per mile, about one-third the cost of the Metropolitan Railway, and about one-sixth the cost of the railway from Charing Cross to Cannon Street and London Bridge, which he had himself constructed, so that it was not so formidable as it at first sight appeared.

Such has been the progress of engineering science that thorough ventilation, either during construction or for the permanent submarine railway, has not been considered by either English or French engineers as presenting any insuperable difficulty. Mr Hawes is even sanguine as to the ultimate success of this Channel tunnel as a financial operation.

This great scheme of a tunnel through the Chalk is that which is best known; but two very different plans have been brought forward by other engineers. The first of these was suggested in 1861, and again in 1867, by the late Mr James Chalmers, who advocated the laying down of a submarine tube in lengths on the bed of the Channel, the water to be pumped out of each segment as attached.

To avoid some of the difficulties attending this plan Mr Bateman, the eminent engineer of the Glasgow Waterworks, in 1869 brought forward another similar scheme in conjunction with M. Révy. By an ingenious device the tunnel was to be lengthened in a movable air-tight cylinder or bell attached to the end of the tube. The probable line suggested was from Dover to Grisnez, and the traffic was to be worked by pneumatic pressure, which would at the same time secure good ventilation. It was estimated that this work might be executed in about five years at a cost of £8,000,000.

The importance of the subject has naturally attracted the attention of geologists as well as engineers,



since the primary object to be determined—before the skill of the engineer is called into play—is the nature and character of the strata on either side of and under the Straits. It is indispensable to have strata that are impermeable to water, and of sufficient thickness throughout to ensure the tunnel in its entire length being continued if possible in the same formation.

Taking the strata in the order of their age, we may observe that the London Clay extends from the coast of Essex to the coast of French Flanders, and in a line from St Osyth to Dunkirk is probably 400 feet thick throughout. The mass and the material are therefore perfectly adaptable for a submarine tunnel. To show the facility with which a tunnel can be driven through this formation, we may mention that the Tower Subway, to which we have already referred, is 1320 feet long and  $7\frac{1}{2}$  feet in diameter. It was driven under the Thames in less than six months, and although in one portion only 20 feet from the bed of the river, there was not the smallest leakage in any part. But the great distance between the two shores, measuring eighty miles, is an insuperable objection to the London Clay.

The Lower Tertiary strata which succeed may be at once dismissed as too permeable and too thin.

The Chalk, which next underlies, consists of an upper division, which is usually much fissured and admits of the ready passage of water, and of a lower division, which is very argillaceous, and when free from faults and fissures is comparatively water-tight, the water which passes through the upper division being generally thrown out as springs on reaching the chalk marl. At the deep artesian boring at Calais the chalk was found to be as much as 1032 feet thick, and, except a few

small insufficient springs in the upper part, no water was met with.

It is a remarkable geological fact, and one bearing much on this inquiry, that in this boring, as well as in that at Guines, the whole of the Oolitic strata were wanting, and that the Cretaceous beds were found to rest directly upon the Palæozoic rocks, which at Calais are of Carboniferous and at Guines of Devonian age. (See Map.)

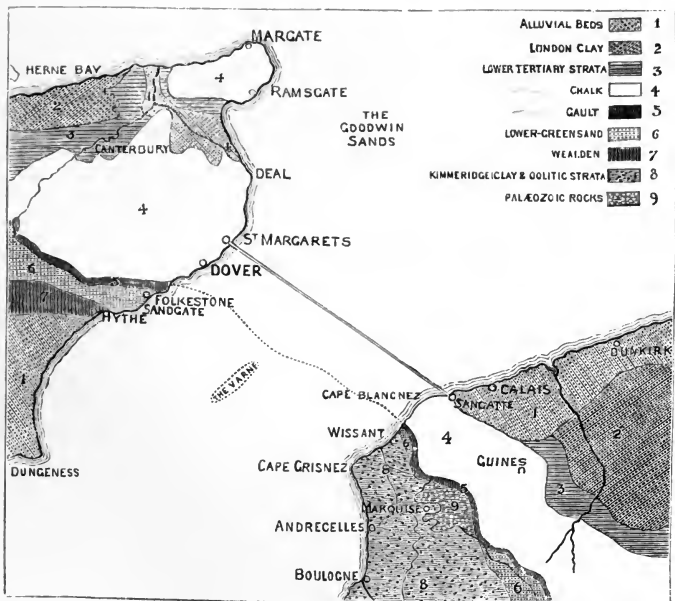
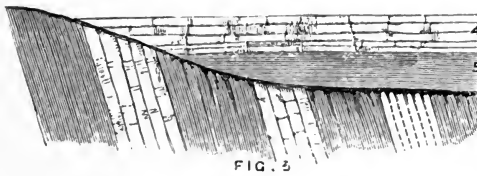
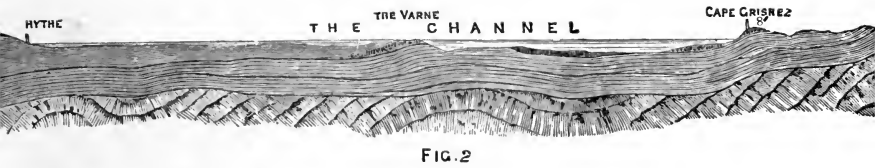
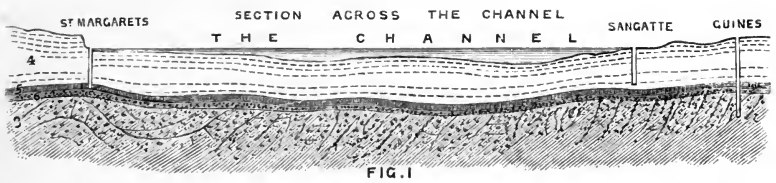
Next, in descending order, comes the Gault, a stiff clay well adapted for tunnelling; but unluckily it is only about 100 feet thick near Folkestone, and thins off to 40 feet on the French coast.

Below the Gault is the Lower Greensand, which forms the sandy and crumbling cliffs at Folkestone and at Sandgate. It may be at once dismissed on account of its extreme permeability.

Underneath these come successively the Wealden strata, extending from Rye to Hythe, where they are of very considerable thickness, but thinning off midway in the Channel.

Next succeed the Portland Stone and Sands, through which water passes with facility, and which are therefore to be avoided.

Then comes the Kimmeridge Clay, which forms the conspicuous cliffs on each side of Boulogne Harbour. It consists in great part of impermeable clays, with intercalated sands and calcareous beds, the whole attaining there a thickness of above 300 feet on the French side. But from the interesting data furnished by the Battle boring we now know it to have a development of not less than 650 feet under the Weald of Kent. On the other hand, there is reason to suppose that the Portland Stone and Sands thin out as



GEOLOGICAL MAP AND SECTIONS OF PROPOSED CHANNEL TUNNELS.



they range towards the English coast, so that the Weald Clay may, in the neighbourhood of Hythe, repose directly on the Kimmeridge Clay. Should this be the case, it might be possible to carry a tunnel commencing in the Kimmeridge Clay of the vicinity of Boulogne, and continued in the Wealden Clay on the English coast to the surface near Hythe.

The Oolitic strata which underlie these beds, and which come to the surface, or underlie the Chalk, farther westward in the Channel, need not be considered, as their permeability and the breadth of the Channel present insurmountable obstacles.

But below all these formations, with their edges upturned at a high angle, lies the great mass of the old rocks known to geologists as the Palæozoic series, which here comprise the Coal-measures, with the Devonian and Silurian strata, and consist of shales, coal seams, hard sandstones, limestones, and slates.

If the Oolitic formations were present everywhere, these old Palæozoic rocks would, in the Chalk area of the south of England, lie at inaccessible depths, but it is now ascertained that a subterranean ridge of these old rocks extends underground from the Ardennes of Belgium to the Mendips in Somersetshire. And there is every probability that the Oolitic strata, which in the Boulonnais thin off against the emerged portion of the ridge, do the same against its underground flanks as it trends under South Kent, so that in the district around Dover, and in other parts of East and North Kent, it is probable that the Palæozoic rocks directly underlie the Chalk and Gault, as has been proved to be the case at Kentish Town and Harwich, where they have been met with at the respective depths of 1114 feet and 1026 feet. They

were also found at Calais at 1032 feet, and at Guines at 635 feet, and they come to the surface to the north of Marquise, between Calais and Boulogne. Their more recent discovery under London—viz., at Messrs Meux's brewery at the corner of Tottenham Court Road—created much public interest, as the boring, after passing through Chalk, Gault, and Oolite, reached rocks containing fossils of Devonian age, corresponding with strata of the same age in the Ardennes. It has been estimated that these old rocks ought to be reached at about 700 to 800 feet from the surface near Dover,<sup>1</sup> and possibly at a lesser depth in the neighbourhood of Folkestone; but at the latter place the Lower Greensand would interfere with access to them.

Professor [Sir J.] Prestwich, from whose paper<sup>2</sup> to the Institution of Civil Engineers the above geological particulars have been extracted, further points out that where Primary rocks are immediately overlaid by Gault or Chalk all ingress of water is effectually prevented; and he remarks that in the case of the coal-field of Mons, where 1000 feet of strata highly charged with water immediately overlies the Coal-measures, these latter are kept perfectly dry, notwithstanding that the pressure of water in the overlying water-bearing strata is greater than that of the Channel waters. He explains how the upturned furrowed edges of these old rocks have been filled as it were with a liquid grouting formed by the decomposition

<sup>1</sup> [Coal-measures have actually been proved (in 1890) at a depth of 1100 feet 6 inches, "in a boring at the foot of Shakespeare Cliff, Dover.]

<sup>2</sup> "On the Geological Conditions affecting the Construction of a Tunnel between England and France" ('Proc. Inst. Civ. Engineers,' vol. xxxvii. p. 135, 1874). See also a paper by W. Topley in 'Popular Science Review,' vol. xiii. p. 394, 1874.

of the superincumbent strata—this grouting acting like a natural cement and preventing the passage of water. (See Plate, fig. 3.) Professor Prestwich lays stress on this as a point of much importance, and as an argument in favour of the Palæozoic rocks for submarine work.

It is further shown that rocks of this class are being actually worked under the sea on the Cumberland coast, galleries having been carried in the Coal-measures for a length of four miles under the sea with perfect freedom from water, and without difficulty as regards ventilation.

The Oxford professor therefore concludes that, apart from their lying at so great a depth, these old Palæozoic rocks present most favourable conditions for the piercing of a tunnel, and offer—so far as safety from water is concerned—the surest ground through which to run direct communication between the two countries.

By engineers and geologists the construction of a tunnel is thus considered practicable, although they do not quite agree as to the choice of the strata. The problem seems to resolve itself into three alternatives:—

*Firstly*, The tunnel through the Lower Chalk would involve the least expenditure of capital and time, as the distance between the two coasts is only twenty-one miles, and the tunnel in its entire length could be carried continuously through the one formation. All eyes will watch with eager interest the result of the tentative driftways.<sup>1</sup>

*Secondly*, Although the Kimmeridge Clay would

<sup>1</sup> [Attention has lately been redirected, by Professor W. Boyd Dawkins, to the proposed tunnel through the Lower Chalk, and he remarks that the driftways which were cut a few years ago have not suffered any appreciable damage.—Rep. Brit. Assoc. for 1899.]

necessitate a longer route, still, if the Portland Sands upon further examination should prove to be absent on the English coast, so as to admit of the tunnel being carried direct into the Wealden Clays, the scheme would have its advantage in the thickness and impermeability of the argillaceous strata. It might be possible also to have a shaft midway at the Varne Shoal, which, as we have already observed, is concealed at low tide by only some three feet of water.

*Finally*, There would remain the old Palæozoic rocks advocated by the Oxford professor, which, although in his opinion safe and certain, would entail vast cost, from the depth at which they lie, their hardness, and from the many miles of underground railway needed on either coast to connect the Channel tunnel with the surface lines.

It is, however, within the range of probabilities that the enterprise which has enabled the French engineers successfully to follow the Coal-measures from Hardingen to near Marquise, may enable them to follow these strata farther towards the coast; and as the strike of the "measures" trends to the English coast between Folkestone and Dover, it is within the range of possibilities that a coal gallery under the Channel may prove the pioneer of the greater and more important work under consideration. As Professor Prestwich remarked—

Under any circumstances, it is evident that the difficulties are formidable. Whether or not they are insuperable are questions which may safely be left to our engineers. The many and great obstacles overcome by engineering science of late years, lead us to expect that, should the occasion arise, and the attempt be considered worth the cost, the ability to carry it out would not be wanting.



We need not enlarge on the boon that a Channel tunnel would be to thousands of travellers and to the many invalids who take flight with the swallows in quest of pleasure or health to the sunny climates of the South, and to the latter of whom especially the steamer passage is always a difficulty and too often a real evil.

It is possible that this age of enterprise is yet to be signalised by one of the greatest engineering works that the world has ever seen.

[*P.S.*—At the general meeting of the South-Eastern Railway Company held in January 1881, and since these pages were first printed, it was stated that another line of tunnel was contemplated, commencing in the outcrop of the Chalk Marl near Folkestone, and following in the dip of the beds eastward, until the required depth was reached for passing beneath the Channel.]



IV.

AN OXFORDSHIRE RESTING-PLACE



## EWELME AND ITS ALMSHOUSE.

AMONGST historical sites in Oxfordshire there is none, to our mind, which has so strong a hold of the imagination as the old-world village of Ewelme — whether we take its position, the scenery that surrounds it, or, above all, the pathetic human interest that pervades its atmosphere. It is situated on the confines of the county, at the head of a little valley which runs up to the foot of the Chilterns, and half hidden among trees. It probably owes its quiet and seclusion to the fact of its not being too accessible to railway travellers, as Wallingford, the nearest station, is four miles distant, while from Oxford we had a drive of seventeen miles. Twice—nay, thrice—we made the pilgrimage to it, on the two last occasions as much fascinated as on the first. The charm of its situation has long been known to artists and to a few Oxford scholars, as well as to students of heraldry, the latter attracted by the two famous monuments in the church. With the sheltering ridge of the Chiltern Hills on one side, and on the other broad meadows intersected by the winding Thames—above all, with the noble spring to which Ewelme is probably indebted for its name issuing forth in its midst, its position is not surpassed in attractiveness by that of any other village in England.

The Saxon form of the name is O-Ewhylme, signifying head of a stream or waterhead; and although in

Domesday Book it is known in its French dress as Lawelme, its designation in Old Latin was Aquelma. The spring—itsself well worth a visit—may have first drawn the early British settlers to the site. There is every reason, too, to believe that it was known to the Romans, since the Ikenild Street passed by Ewelme Common, where coins of Trajan and urns have been found, as well as other Roman remains. One can imagine the legions on their march along the old military road turning aside to quench their thirst at this permanent natural fountain. It is now enclosed in the garden of the manor-house, the said garden occupying a steep slope at the north end of the village. Like almost all chalk water, it is crystal clear and wells up in a small basin made by its own action. As we stood by it involuntarily our thoughts went back to its origin—how the little rain-drops, falling upon the absorbent surface of the chalk hills, sank into the porous rock, and receiving repeated reinforcements from their gathering-ground, the rain-drops ran together, as they sank together, and travelling slowly by underground channels, made their escape, after an imprisonment maybe of months in nature's rocky reservoir, in this form of a beneficent spring.

But we must not be tempted to linger over the spring and its origin—the aspect of the village as seen in our own day is what concerns us. Although the natural features are so striking—from the abrupt rise of the steep chalk ridge behind, and from the grand old river being barely three miles distant in front—yet the village as a whole presents no notable points. The irregular cottages lining the single street or road are nothing remarkable, and are almost all near and below the outflow of the spring, while high towering elms

overshadow the church and alms-buildings planted on the slope. With the exception of these, there is nothing to indicate the importance of the Ewelme, which played no inconspicuous part during the turbulent times of the Henrys and Edwards. In vain we looked round for vestiges of the stately edifice which once upon a time was the favourite resort of kings and queens: a poor fragment of a crumbling wall is all that remains of the palace, which in its day was described as "magnificent."

It is not, however, its beauty, nor its salubrity, nor its picturesque position, that has attracted us to Ewelme. It is the human interest that hangs about the place, and which, so to speak, has cast upon us the spell of its fascination. And this interest centres in the little group of buildings represented by the church, school, and Almshouse, or rather in the history and fate of their unhappy founder.

They stand together only a short way from the spring, and are all in excellent preservation. The church, which we first entered, takes one by surprise, and at a glance we saw that it bears evidence of having been something more than the church of a small country village. The lines of the Perpendicular windows show few symptoms of decay, nor do the massive monuments which record the names of the descendants of "the father of English poetry." The Chaucer monument in St John's Chapel, on the south side of the chancel, contains the tomb of Thomas Chaucer and Matilda his wife, with their recumbent effigies in brass, the walls of this chapel being diapered alternately in red and blue with the letters I.H.S.

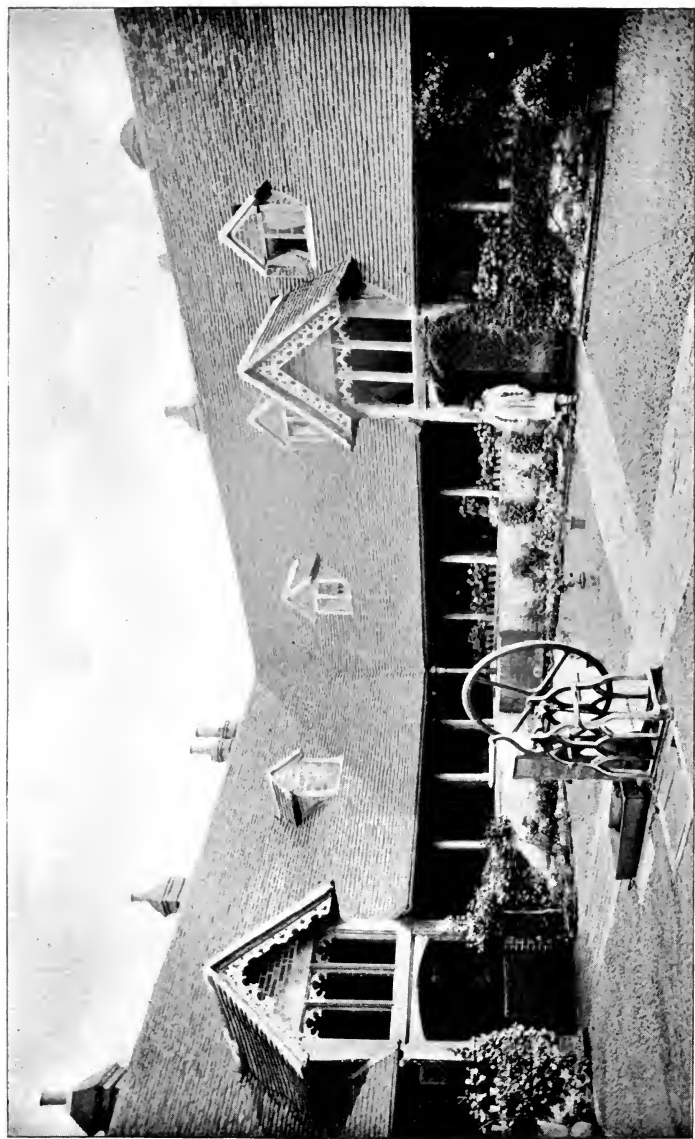
But the most remarkable tomb is that of their daughter, Alice, Duchess of Suffolk, widow of the un-

fortunate William de la Pole, first Duke of Suffolk, and co-founder with him of the church, the Almshouse, and school. It was through Alice as daughter and heiress of Thomas Chaucer, son of Geoffrey Chaucer, "the great architect of our versification," that Ewelme passed to the family of De la Pole. A life-size figure in alabaster of Alice reclines on a massive sarcophagus, which is surmounted by an elaborately decorated canopy of stone. The figure is represented wearing a ducal coronet and mantle of estate, with the Order of the Garter buckled on her left arm. There is no monument to her ill-fated husband: his remains were laid in the church of Wingfield in Sussex.

A flight of steps communicating with the church took us down into the quiet quadrangle of the Almshouse, or "God's house," as it was termed. Unlike too many buildings of the same date, which suffered from rough usage during the last Civil Wars, this ancient red brick edifice is in good preservation, and to this day fulfils the pious purpose of its foundation. It still serves, as it served nearly four and a half centuries ago, as a home for thirteen infirm poor men, who, in the words of its "statutes," "may by no faculte of lawfull crafte gete here bodily sustynnaunce," who "for lakke of sustynnaunce and they were not by almesse releyved they lightly perish."

We had only to enter the "quad" of the Almshouse to realise that, interesting as are the sepulchral monuments in the church, they yield in interest to this quaint fragment of medieval life and piety that has survived down to our own bustling times. Outside we had been buffeted by squalls and showers, here we seemed to have entered a little world sheltered from every storm. As we stood in the tiny "quad," with the





THE ALMSHOUSE, EWELME.



draw-well in the middle, and looked at the carved barge-boards of the upper windows, and at the little cloister or covered way running round the "quad," we felt as if a bit of Old Oxford in miniature had been preserved to us, or as if a bit of the life which had given birth to Oxford and still pervades its quadrangles and buildings had survived in this house of refuge for the aged and infirm poor. Each tenement consists of a living-room on the ground-floor opening on the court, with a sleeping-room above. There are thirteen such dwelling-houses, tenanted by thirteen poor men, who each receive a sum of ten shillings every six weeks. Seven of the pensioners were married men, so at the date of our visit the small community numbered twenty souls. In the "quad" are also the rooms of the Master of the Almshouse, an office which was annexed by James I. to the chair of the Regius Professor of Medicine at Oxford, and as such was at this time, therefore, held by Sir Henry Acland, the distinguished Oxford physician.

The grammar-school adjoining forms part of the foundation, and as its architecture harmonises with that of the Almshouse, the effect as a whole is singularly good. The group of buildings appears to have been begun in 1437, when Henry VI. granted a licence for their projected foundation; but the statutes of the Almshouse, written on vellum and bearing the single signature "Suffolke," must have been signed after the 2nd June 1448, the date on which the founder was created a duke. These statutes occupy nearly fifty pages of MS., and recite in quaint terms the object of the endowment and the rules for the government of the Almshouse. Through the kindness of the [late] Master I was able to look through this curious docu-

ment; with the spelling of a few words modernised the following are the opening sentences :—

In the name of God. Be it knowne to all trew Cristen pepull the contents of this present fundacion on seeing, hering and understanding. We, Willm. de la Pole, Duke of Suffolke, and Alice my wife, Duchesse of Suffolke desyre helth in body, grace in sowle, and evilasting joy to opteine. Be cause all Criste pepull mekely and devoutly consideryng how by the upholdyng and maintenynge of divine service. And by the exercise of warkes of mercy in the state of this dedely life in the last dredeful day of dome they shall with the mercy of owre lord take here parte and porcion of joy and blysse with them that shall be save aught by reson have a grete and a fervent desire. . . . The might of the fadir, the wysdom of the son, the goodnesse of the holy goste, three persons in one godhede: humbly we beseeche of his grace principally be oure helpe to come and spede the whiche called in and assure: and procede in this mannre.

Might not the rules laid down for the conduct of the thirteen almsmen be applied with benefit to some modern communities?—

Also we wol and ordeyne that all tyme to com in the which the minister and pore men shall be abydyng in the seide howse or any partye therof, they shall be restfull and pesibill with oute noyse or troubill of here felowship with oute cryyng and grete noyse makyng attendyng to prayers or to redyng or heryng of vertuys lyvyng or ellis occupied with honeste laboure of here hondys kepyng them selfe from jaynglyng and chydyng and in speciall from fowle, bostfull and ribawdise talkyng of thyng doon in here dayes thanne afore passed.

Again :—

Also as for the forsayde xiii pore men, we woll and ordeyne that one of them wele disposed in wysdome and discrecion be called ministyr to whose office it shall longe trewly to present errors and defawtes of the foresayde pore men to the mastyr withoute fraude or gyle and to ryng the comyn bell to the service, etc.

Unpunctuality at divine service was punished by reduction, on a sliding-scale, of the pensions:—

Therefore we wol and ordeyne that yf it so be that any of the forsayde xiii pore men com late to the forsayde service spiritall occupacion or prayours that thanne the Mastyr correcte theyme by the withdrawyng of theyre wages. As if it so be that any of theym be so negligent and slewthfull that the first psalme of matyns be begon or he com in to his stall that thanne he lese 1d. and yf any of thaym be absent to the begynnyng of the fyrst lesson that thanne he lese iid., [and so on].

We cannot resist quoting the final paragraph:—

Finally to speke in this mater we pray and hertely beseech Mayster, techer of grāmer, ministyr and pore men now present in the same howse and all afterwardis to come that they have and kepe amonge hem selfe continuell charite servyng praysyng and trewly to God and to the persones and sowles forseide after this present ordynauce so lyvyng porely and mekely specially in spirit in their covirsacion in the seide hows: that after the state of this dedely lyfe they mowe com and inhabite the howse of the kyngdome of heven—the whiche with oure lordes mouth is promysed to all hem the whiche bene pore in spirit. So be yt.

From beginning to end the statutes inculcate charity, meekness, temperance, and godliness. The spirit that pervades them accords ill with the character that historians generally (with, however, a few notable exceptions) impute to the hapless first Duke of Suffolk.

He also built the palace at Ewelme, of which we have already spoken as having been of great size and splendour. Camden reports that in 1607 it was in a state of decay; and another writer tells us that “it was a magnificent structure, moated round, and situated in the valley of the village.”

The fate of the unfortunate first Duke of Suffolk throws such light on the stormy age in which he

lived that we cannot pass it over without some notice. It contrasts strangely with the quiet, unruffled village life of the present day.

His death is indeed one of the most heart-stirring tragedies of the reign of Henry VI. He attained the highest honours, was the trusted friend of both king and queen; as a minister he wielded power almost absolute, and it may be that his exceptional success drew upon him the enmity of the people. When sent to France as ambassador with unlimited powers to negotiate the king's marriage with the youthful Margaret of Anjou, he had rashly promised the cession of Maine and Anjou to René of Anjou, father of the bride, and though this promise was afterwards ratified by the Council, it was never forgiven by the English nation. The enemies of Suffolk laid hold of any plea to bring forward a charge of treason, yet in the long list of political offences against him they dared not in his lifetime accuse him of the murder of the king's uncle, the Duke of Gloucester,—a crime, however, which was afterwards currently reported and believed. Was Shakespeare in his play of "Henry VI." biassed by the popular belief when he painted the ill-starred Suffolk in the blackest colours, and represented him as the prompter and perpetrator of the death of Humphry, Duke of Gloucester? or was the evidence against him overwhelming? Amongst historians who dissent from this verdict are Whethamstede, Abbot of St Albans, and William of Worcester, who assert that the Duke of Gloucester died a natural death, that "he fell ill immediately after his arrest and died of his illness." This is the testimony of Whethamstede, the devoted friend of the Duke of Gloucester.

Guilty or guiltless, the popular mind had decided

against Suffolk. Rumours ominous to his fame had gathered strength, and hearing of these he rose in his place in Parliament, confronted his enemies, and demanded what those charges were. Surely he had a claim to be heard.

He besought the King to recollect that his father had died in the service of his country at Harfleur, his elder brother had fallen in the battle of Agincourt, his second and third brothers had perished at Jargeau, and his youngest brother had expired a hostage in France; that he himself had been a Knight of the Garter thirty years, had spent thirty-four years in arms, during one-half of which time he had never visited his native country, that he had been fifteen years sworn of the King's Council, that he was born in England, that his inheritance and the inheritance of his children and posterity lay in this country.

He then asked if it were possible for him to be a traitor to his country, and most solemnly declared his innocence. Nevertheless, a few days later, followed his committal to the Tower on the absurd charge of having provisioned the castle of Wallingford for the purpose of aiding the French invasion of England. When he appeared before the House of Lords to answer this and other political charges, the chief of which was a design to dethrone the King, Suffolk fell on his knees before Henry and in the most impressive words declared himself innocent as the babe unborn. Henry, however, realising the necessity of some stern step to appease the people, ordered Suffolk into exile, with, it is said, the secret intention of his recall.

Before leaving England the exiled Duke repaired to Suffolk, and on the morning of his departure assembled the knights and gentlemen of the neighbourhood, when he swore to them on the Holy Sacrament that he was guiltless of the crimes laid to his charge,

and that he should prove his innocence. At the same time he wrote a letter to his son, which is one of the most affecting compositions ever penned, and which must ever be a powerful witness in support of the writer's innocence. Its sadness betrays the misgivings he had as to his own impending fate. In this touching farewell Suffolk exhorts his son above all to love and serve his God, to be dutiful to his mother, and a true and loyal subject to the King. Let us hope that his words will live when the obloquy which has clouded his name will have faded away.

The Duke put to sea from Ipswich and made for the coast of France; but if the ghastly tale be told, it had better be in the words of one of the letters of the Paston Collection, dated 5th May 1450:—

The Duke of Suffolke came into the coasts of Kent, full near Dover, with his two ships, and a little spinner; the which spinner he sent with certain letters, by certain of his trusted men unto Calais-ward, to know how he should be received. And with him met a ship called Nicholas of the Tower, with other ships waiting on him, and by them that were in the spinner, the master of the Nicholas had knowledge of the Duke's coming.

When he espied the Duke's ships, he sent forth his boat to weet what they were, and the Duke himself spoke to them and said he was by the King's commandment sent Calais-ward, &c., and they said he must speak with their master. And so he, with two or three of his men, went forth with them in their boat to the Nicholas: and when he came, the master bade him "Welcome, traitor," as men say.

And, further, the master desired to wete if the shipmen would hold with the Duke; and they sent word they would not in no wise: and so he was in the Nicholas till Saturday next following. Some say, he wrote much thing to be delivered to the King, but that is not verily known. He had his confessor with him, &c., and some say he was arraigned in the ship on their manner, upon the impeachments and found guilty. . . .



And in the sight of all his men, he was drawn out of the great ship into the boat, and there was an axe and a stock; and one of the lewdest of the ship bid him lay down his head, and he should be fairly ferd with, and die on a sword. And took a rusty sword, and smote off his head within half-a-dozen strokes, and took away his gown of russet and his doublet of velvet mailed, and laid his body on the sands of Dover; and some say his head was set on a pole by it, and his men sit on the land by great circumstance and pray. And the sheriff of Kent doth watch the body, and [hath] sent his under-sheriff to the judges to weet what to do, and also to the King [to know] what shall be done.

Such was the end of the founder of the Ewelme Almshouse, who, only a few days before his death, was "the greatest and most powerful person in the kingdom."

After his death his enemies brought forward a bill to attainth his memory, charging him with being accessory to the murder of the Duke of Gloucester; but Henry, gentle and impassive on other occasions, indignantly rejected it.

Our first glimpse of Ewelme Almshouse had been a pleasant surprise; afterwards, our interest in the mere material structure seemed to wane, and to be more and more drawn to the story of the life of the founder—a record which even now, after the lapse of centuries, we cannot read unmoved.

On our last visit we approached Ewelme from the Chilterns. After a few miles' drive along the ridge we descended by Swyncombe Park, its ancient church and manor-house embowered among trees. The chalk slopes farther on, instead of presenting the bare and treeless character that they usually exhibit elsewhere, were dotted over, and in places covered, with juniper-trees, the thickets of juniper curiously mingled with

Abele-trees (white poplar), the contrast of foliage standing out with telling effect on the pale grey-green of the downs. The young cornfields of the valley made a striking picture, overrun as they were and all aglow with the yellow charlock.

This very road was probably a favourite ride with the inhabitants of Ewelme Palace, since it led to the beautiful scenery of the Chilterns. We could not but think of those who once upon a time had given celebrity to the place, and who had traversed the ground over which we were passing. Did the broken-hearted Margaret of Anjou in the years of her captivity at Wallingford ever gaze on that picturesque escarpment, and its curious facing of juniper and white poplar? Or did her weary eyes rest like ours on the glowing cornfields? When Henry VIII. spent his honeymoon with Jane Seymour at Ewelme Palace, did he lead the luckless bride up these heights with the escort of a gay cavalcade? Did he traverse different paths when there with Katherine Howard? Or to go back to an earlier date, did Chaucer ever visit his son and his son's wife, through whom the inheritance came to Thomas Chaucer? And were any of these fair scenes mirrored in his verse?

Yet as we think of Ewelme and of those who made it famous, the pathetic and prominent figure is that of William de la Pole, first Duke of Suffolk, the warrior statesman to whom the Almshouse and other buildings owe their foundation.<sup>1</sup>

<sup>1</sup> [For further particulars see 'Historical Notices of the Parishes of Swyncombe and Ewelme, in the County of Oxford,' by the Hon. and Rev. H. A. Napier. 4to, Oxford, 1858.]

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